

# COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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## GE Enters Plug-for-Plug Disk Drive Market

CHICAGO — General Electric entered the plug-for-plug compatible market last week in collaboration with Greyhound Computer Corp. The disk drives, which have the same access speed as the IBM 2311s, are priced considerably below the IBM units. Leases start at \$475 a

month for a one-year contract and drop to \$290 a month for a six-year contract, including prime shift maintenance. Deliveries already committed by Greyhound start this month.

This move by GE follows its recent announcement of its 2311-compatible disk packs and

is the first move by a major manufacturer to enter the plug-for-plug compatible market for IBM 360 series equipment.

The drives, called the GCC 3311s, have two additional protection features built in, one dealing with an air chamber which has been designed to

minimize contamination when the access lid is closed. This is said to increase pack as well as head life.

In addition a glass cover remains over the disk area during maintenance, again to reduce the danger of contamination to the pack. This permits adjustment to

the drive in its normal operating environment.

No software or hardware modifications are required to introduce the system onto an existing 360 installation, according to the company. Simply unplug the 2311 and plug in the 3311, it says.



Mothers picket outside IBM stockholders meeting. (World Wide Photo)

## Harassed IBM Directors Get a Standing Ovation

SANTA MONICA, Calif. — IBM stockholders gave the board of directors a rousing standing ovation at IBM's annual meeting here April 28.

Beatrice Kelekian, a frequent critic of IBM management, led the ovation in the early minutes of the meeting by calling for an acknowledgement for the officers of the company for the "harassment heaped upon the company."

Whether "harassment" referred to the complex and multiple legal problems over the last year or the 30 picketing mothers outside the meeting who were protesting IBM's part in sex educa-

tion was not clear.

### IBM and Sex

Thomas J. Watson, chairman of the board, acknowledged the presence of the picketers, explaining that a company subsidiary, Science Research Associates, was engaged in producing a textbook that included sex instruction. "We did hire this group [Sex Information and Education Council of the United States] to discuss the subject with high school teachers. The questions and answers of one session were taken out of context, and they implied in the press that IBM was making these comments.

"The book is rather simple and bland," Watson added, "but we have ceased sending speakers out on this interesting subject."

The marchers outside the meeting, however, were passing out leaflets asking, "Why does the SRA division of IBM work with the Sex Information Council on sex education when the council's materials are so pornographic that they are banned in California schools?"

### IBM and Antitrust

Commenting on the antitrust suit filed against IBM by the Justice Department, Watson

(Continued on Page 49)

## SJCC to Offer 34 Tech Sessions, Exhibits by a Record 170 Firms

BOSTON — The annual Spring Joint Computer Conference opening here May 14 will include 34 technical sessions and a record 170 exhibits.

Sponsored by the American Federation of Information Processing Societies (Afips), the conference and show allow people in the EDP field to brief themselves on the latest developments, products, and services.

Registration for the conference may be completed on May 14 in the lobby of the War Memorial Auditorium on Boylston St. The fee for Afips members is \$20, for non-members, \$30.

### Speakers

Keynote speaker for the opening session will be Gen. James M. Gavin, chairman of the board and chief executive officer of Arthur D. Little, Inc.

Principal speaker at the May 15 banquet will be James C. Elms, director of the Nasa Electronic Research Center in Cambridge, Mass.

### Special Activities

A variety of special activities has been planned for SJCC. Afips will sponsor a theater program exploring the theme of interaction of computer technology and human creativity. A science film feature with empha-

sis on new computer applications will run continuously, and tours will be conducted in and around the Boston area to several manufacturing and computer installation sites.

May 14 is computer night at the Boston Pops. A block of tickets has been reserved, and a special musical program will be prepared for the conference.

Wives of attendees will have the opportunity to explore the cultural sites of Boston. Special tours will be provided in the ladies' program. Registration for

the wives will be May 13, and each morning of the conference, in the Hampton Room of the Sheraton Boston Hotel.

A complete description of activities is provided in the 1969 SJCC program booklet, copies of which will be available at the distribution table near the registration counter.

Copies of the conference proceedings will be available in Room 206 of the War Memorial Auditorium.

Details of the conference sessions appear on pages 24-26.

## Afips to Get Competition From New Exhibitions?

NEW YORK — A new series of computer exhibitions was announced last week which apparently presents a direct challenge to the joint computer conferences. The new exhibitions, called computer software and peripherals shows and conferences, are to be presented regionally in New York, Chicago, and Los Angeles by Show World, Inc. The firm also manages a number of other shows, including those of the American Ceramic Society and

the Manufacturing Jewelers, Suppliers, and Equipment Exposition and Seminar.

The firm has named its shows Compso for short, and has engaged the New York Hilton, the Chicago Pick Congress Hotel, and the Anaheim Convention Center for the three first shows starting in January next year.

Unlike the American Federation of Information Processing Societies which is concentrating on the "tool manufacturers," Compso intends to include provision for many other computer-related businesses, including computing and data processing services, time-sharing services, consulting services, free-lance programming, management courses in computer-related subjects, programming skills, publishers of computer books, and many more. The peripherals area will include the whole spectrum of input/output devices, ranging from the mechanical to the optical, communications devices, graphic displays, and even special furniture and supplies.

Compso officials point out that a number of computer firms have restricted capability in reaching their actual market. Service centers, they argue, can only list themselves in telephone books and use a smattering of ads in local media.

## First Century 200 to Be Shown at SJCC by NCR

By Jack Jones  
CW Correspondent

DAYTON, Ohio — NCR plans to demonstrate the Century 200 at the Spring Joint Computer Conference. It is said to be the first showing to more than a small group.

The company also expects to show its 1500-line/min printer, an integral part of the 200, and a CRT terminal.

The processor is the second of what is expected to be a larger series of computers.

The basic Century 200 consists

of a 32K processor, the fast printer, a dual-disk unit with a capacity of 8.3-million 8-bit characters, and a card (or paper tape) reader. The system is available for as little as \$3,355 per month on a five-year contract.

A company spokesman said that NCR will demonstrate a Cobol compiler suitable for use on either the 100 or the 200.

Deliveries of the Century 200 to NCR's regional centers are currently under way, with first shipments to customers expected to begin in the next few weeks, the spokesman said.

### On the Inside

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Technical Sessions

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Be Standardized

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## USASI, Codasyl Cobol Manuals Published; Codasyl Work Costs Less, Offers More

NEW YORK—The official USA Standards Institute Cobol manual was rushed to publication last week and unexpectedly managed to almost tie with the Canadian government's publication of Codasyl Cobol-68. However, the USASI manual came out without being type set and, while legible, had many poorly printed pages. "If we had had another week, we could have put this out looking a lot nicer," said Bertram Stanleigh, USASI publications manager. The standard manual costs, at \$6.50, just four times as much as the equally large Canadian manual.

### Mystery Announcement

As a result of the rush, Stanleigh said, USASI did not check the contents of the manual and so failed to realize that it also constituted an announcement of the availability of audit routines. He explained that they were now receiving requests for these routines but had no idea as to what they were or how they were to be made available. "They could be very cheap or very costly. We just don't know. We have asked Bema [Business Equipment Manufacturers Association] about them, and we hope to get an answer soon."

### Profit Motive

The high price of the manual was caused by the need to support USASI projects out of the profits made from publications. Stanleigh said that so far X3 publications had not been very profitable and that unless they sold more copies of Cobol than they had done of the Fortran standard, they would not even make ends meet. Approximately 3,000 copies of the Fortran manual have been sold.

He explained that it was perfectly possible to produce the manual for under \$1.60 (the U.S. equivalent of the Canadian price). But he said that storage, postage, and the need to allow for the one-third discount for members and for quantity discounts prevented USASI from charging less than \$6.50.

### Delay in Bema?

Industry sources indicated that much of the delay had occurred somewhere in Bema's area of responsibility while discussions were going on about copyrights. The standard was approved last

August, but USASI did not receive the copy until April, 1969. Under USASI regulations, all standards have to be copyrighted by USASI to protect its printing investment. With regard to Cobol, however, much, if not all, of it was already in the public domain and the problem of firms wishing to use it for manuals was considered unclear. Eventually, in the printed copy, it was copyrighted by USASI.

### Canadian Stresses Public

While Stanleigh said that the \$6.50 price was unavoidable for individual sales, Canadian Minister of Defense Production Don Jamieson stressed in his introduction to the Cobol-68 manual the importance that the

government felt should be attached to making it available to the general public. This manual, unlike the USASI manual, will be updated each year and includes all the latest amendments to the Cobol language that have been accepted since Cobol-65 was published.

Copies of the USASI manual can be obtained from the USA Standards Institute, 10 East 40th St., New York, N.Y. 10016 at a price of \$6.50 a copy. The Canadian Codasyl Cobol Journal of Development 1968 can be obtained from A.G. Dunn, Specifications and Standards Branch, Dept. of Supply and Services, 88 Metcalf St., Ottawa, Ontario, Canada, at \$1.60 a copy.

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## DATA COMMUNICATION IDEAS?

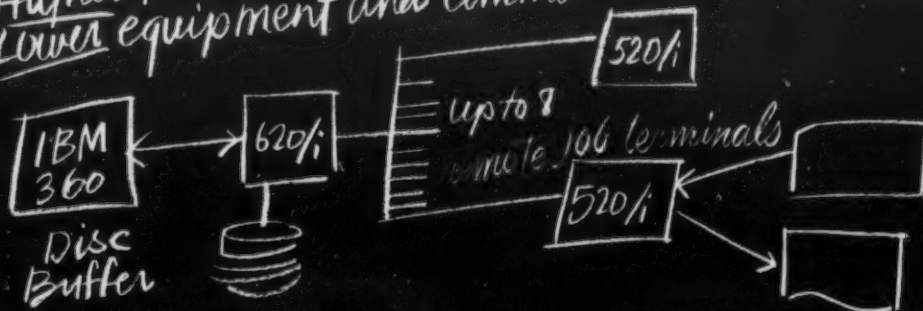
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Editor Alan Taylor digs into the technical details of a complex hardware system.



Staff writer A.B. Williams utilizes the *Computerworld* time-sharing terminal to check the Stock Trading Summary program.

## Dateline Boston: Faces Behind the News

It takes a varied staff to keep the news flowing on any newspaper. *Computerworld* is indeed no different.

This photofeature is our introduction to the *Computerworld* news room — the people behind the bylines.

A CW Photo Feature  
by Farmer and Coffey



Drastic editing by financial staff writer V.J. Farmer is sometimes needed to cut financial news to realistic proportions.



News Editor Robert Patterson discusses a story with one of *Computerworld's* correspondents.



Staffer Joseph Hanlon checks out a technical story in *Computerworld's* library.



Reporter Patricia Coffey discusses system performance with a computer user.



Staff writer Peter L. Briggs questions a software company on a new program.

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## IRS Is Switching To Key-to-Tape Computer Input

AUSTIN, Texas — The Internal Revenue Service will be unburdened of some 400,000,000 punched cards — enough to wrap the earth in a "cummerbund" of cards two layers deep — by the use of key-to-tape systems.

The Datanet Key Station Terminals developed by GE will be installed in the IRS's seven regional centers, from now through the end of 1970.

The devices were approved after full-load testing at IRS's Austin regional site. That center reports that only one-third of its operators have had keypunch training and that future operators will be required to have only moderate typing skill.

According to Ervin B. Osborn, director of the Austin center, one individual return required three-and-one-half punched cards. He sees great saving of time and trouble in the elimination of punching, verifying, storing, transporting, and processing card input.

As yet, GE has not announced the devices commercially.

## Controller Links IBM 2311s With The H-P 2000A

PHILADELPHIA — Following last week's announcement of the first non-IBM disk controller for IBM 2311s, a second one was announced this week by Community Computer Corp., a Philadelphia time-sharing and software firm.

The new unit, called the CCC1010, interfaces the Hewlett-Packard 2000A time-sharing system directly with the IBM 2311s.

The price of the complete package, including software, is approximately \$30,000. Deliveries have not yet been scheduled. Manufacturing of the unit will begin later this year.

The use of the 2311 increases the disk storage capability of the Hewlett-Packard 2000A from 700,000 to 8.2 million characters. Use of the system has little effect on the overall execution time as the software continues to use the swapping area on the Hewlett-Packard disk.

## 3M's New Disk Coating Reduces Static Charges

ST. PAUL, Minn. — A new conductive coating is featured on an IBM 2314-compatible disk pack announced by the 3M Co.

The company claims that the coating minimizes the development of static charges which cause "phantom" errors and the collection of dust and contamination.

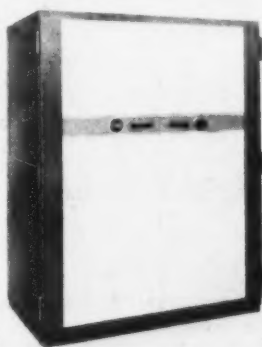
The pack, designated the 911, is described as competitively-priced, and available immediately for lease or purchase.



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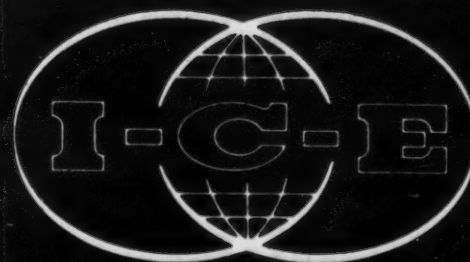
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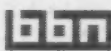
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## Firm Donates Electron Microscope For Study of Magnetic Recording

SANTA CLARA, Calif. — An electron microscope which had been used to study the microscopic structure of magnetic recording material has been donated to the University of Santa Clara here by the Memorex Corp.

Memorex used the Akashi Electron Microscope during the development and production of its magnetic tapes, disk packs, and videotape products. The electron microscope magnifies things as much as 100,000 times and pro-

vides the only practical method for studying a cross-section of magnetic recording material.

"With this piece of equipment we'll be able to do many things in the field of magnetics which were previously impossible," said Dr. Raymond B. Yarbrough, an assistant professor in the university's department of electrical engineering.

The Memorex donation was made possible by the company's acquisition of a more sophisticated electron microscope.

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## Editorials

### Thanks

As you will have already noticed, this issue of CW is the largest we have ever put out. We are naturally very pleased that readers and advertisers have found good values in our publication. Our paper is less than two years old and, much though we would like, we can hardly claim the credit for the achievement of this substantial progress in such a short period.

Instead, we must recognize the role of both readers and advertisers. By their interest and their comments and ideas they have enabled us to create a well-accepted service for the computer community in an unusually short time.

Our thanks go to them. We will strive to be worthy of their support.

### Competition

The emergence of competition in the computer exhibition area, reported in this week's issue, was perhaps inevitable. An industry that consumes a significant portion of the gross national product cannot expect competition not to exist in any of its spheres of interest. The current preeminence of the Spring and Fall Joint Computer Conferences could not have been expected to have continued unchallenged indefinitely, and it may well be that in the future these exhibitions will continue to grow, either in spite of, or even because of, the newer interest.

At the same time it does bring out rather strongly the commercial importance of the present Afips activities and the fact that other people are prepared to realize the profits from putting on computer shows.

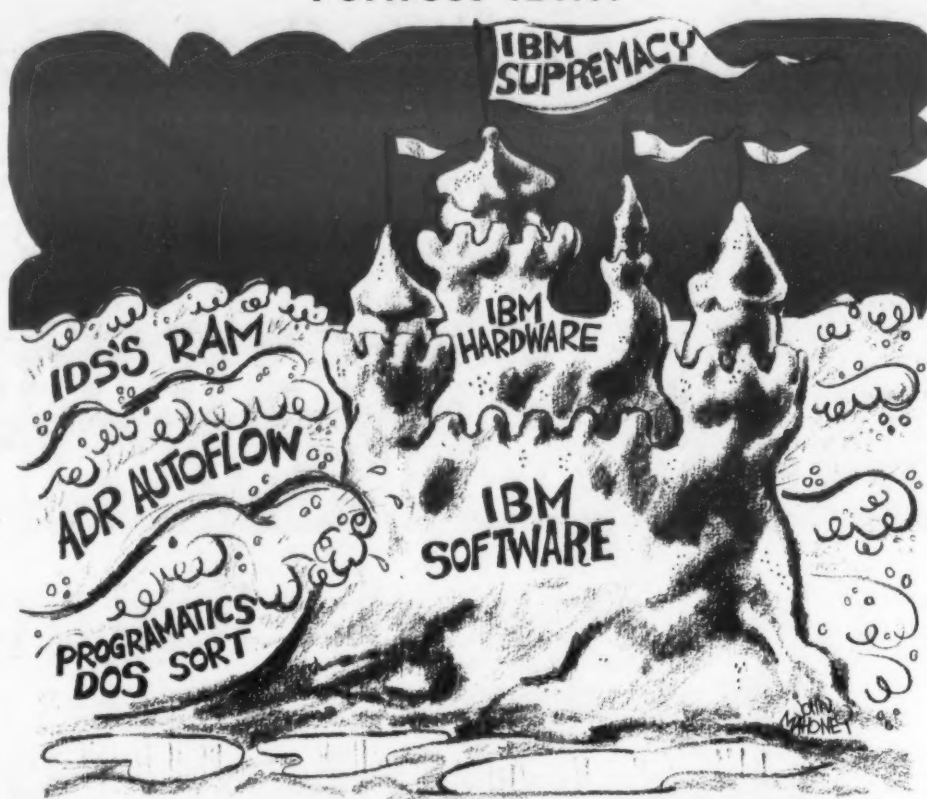
### Dirt Costs Money

The new disk pack cleaner announced last week by Kybe Corp. falls into the category of apparently unnecessary equipment. After all, the customer engineer has traditionally looked after the cleaning of the packs as part of his normal maintenance duties.

However, with the spread of the use of one company's disk packs and another company's disk drives in recent years, we can see that the actual responsibility for seeing that the disk packs are cleaned rests really with the user — and only in the exceptional case where he is prepared to forego the possibilities of selecting computers, disk drives, and disk packs from the full market can he avoid this responsibility.

The new unit appears to us then to be a necessary and valuable unit, one which many users will find a worthwhile addition to their computer facility. Cleanliness may not come free, but dirt certainly costs money.

## Fortress IBM?



## Letters to the Editor

### New Software Patent Called Unconstitutional

David Ferguson recently patented a technique which may be used to construct computers in one sense or another (i.e. in hardware, firmware, or software form) in such a fashion as to save bits on the operation code segment of the ensuing computers' instruction repertoire. The technique has been well known for many years under the name of *context sensitive grammars*, and in my letter to *Computerworld* (March 12) I objected to the patent and gave examples of some of the better known applications. Two of the examples I cited were Read Only Storage (ROS) controlled interpretation on the IBM S/360 and the addressing scheme employed on the DEC PDP-8.

Ferguson's reply is hardly satisfactory [CW, April 16]. He dismisses my examples as having nothing to do with his patent. He proves (?) this by describing the *purpose* to be achieved by S/360 ROS and the PDP-8 addressing scheme. He in no way mentions the *technique* used for implementing the technique.

His claim that the PDP-8 addressing scheme does not enable a saving of bits per instruction is not true to fact, for if the PDP-8 used addressing in the conventional sense, as opposed to taking advantage of context rules, then it would require a 20-bit instruction length, as opposed to the 12 bits it now requires. S/360 ROS, on the other hand, was not explicitly designed to optimize instruction lengths, yet in practice it saves a bit per instruction. This is due to the fact that two sets of concepts (360 and emulated operation codes) are physically represented by a single set of symbols (bit configurations). The meaning to be attached to the symbol vocabulary is ambiguous unless the applicable set is either implicitly or explicitly indicated. The S/360 ROS technique relies on implicit (contextual) meaning specification. If it used an explicit method, then a bit in each symbol in the operation code vocabulary would have to be dedicated to meaning qualification. If Ferguson still claims that the technique does not save a bit per instruction, and that it is not an obvious application of his patent, then he should show that the concept upon which it is founded is not context sensitivity!

The fact that the patented concept has been well known and widely applied is not the only reason for my concern. I would like to establish that Information Science is an academic discipline, despite all appearances in the field and the fact that its practice happens to be profitable today. If IS is an academic discipline, then its fundamental

principles, which are analogous to the Newtonian trilogy of physics and the law of commutativity of algebra, are innately unpatentable. The appropriation of one of the fundamental laws of IS has the following unfortunate implications:

1. If the fundamentals of IS are patentable, then so are those of physics and mathematics. Accordingly all those engaged in any form of physical or mathematical activity would be liable to pay royalties to the holder(s) of the patent rights.
2. Since IS is an academic discipline, anyone is entitled to speak or practice any and all such fundamentals at his discretion, else his civil liberty is violated.

I feel very strongly that Ferguson's patent, covering a fundamental concept of IS and obviously a thought process on the elemental level, is constitutionally illegal, implies a serious setback to the computer industry as a whole, and brands all those engaging in any form of contact with information processing as technicians.

Lawrence Pfeffer  
Software Consultant

Brooklyn

### Reader Asks Reason Why CW Doesn't Print Inquiry Cards

I have been reading *Computerworld* since issue No. 1 and have often wondered why no provision has ever been made for the reader to easily obtain information from manufacturers.

I am referring to the Readers Inquiry Card. Logic would dictate that I cannot be the first person to ever have brought this idea to your attention. There must be some reason why you have decided not to include this in *Computerworld*.

Dennis A. Vihnanek  
Systems Analyst

Toni Co.  
Chicago

Time is the prime reason. Our aim is to deliver to our readers a fresh, up-to-date newspaper each week to keep them informed about new ideas, products, and services within days of the information becoming available. Reader service cards not only slow down the production schedule, they also can introduce a two- to four-week delay between the time the reader requests information and the time the appropriate company is notified.

By contrast, we try to include the addresses of companies in stories so that readers can make direct contact — and get immediate attention and timely response. Ed.



## PL/I Standardization — Part 1

# Some Reasons Why Users Want PL/I Standardized

By Alan Taylor

There are many reasons why users want PL/I to be standardized. Standardization now has been underway since 1966, and so far has gotten precisely nowhere. This undoubtedly is hurting many users and this article will deal with some of the reasons why users want PL/I to be standardized.

### Would Help Users

One PL/I user, Union Carbide Corp., points out that standardization might have enabled the user community to be spared another round of incompatibility. William H. Feathers, vice-president, says that it astonishes his company that a language voluntarily relinquished for standardization by its sponsor should not be allowed to proceed smoothly toward that goal. Implicit in Feathers's comment is the fact that a standard language is a help to the computer-using community.

### Keeping the Faith

A slightly different argument is offered by L.H. Scott, Jr., director of systems and information services for the Seaboard Coastline Railroad Co. Seaboard now has a large investment in PL/I programs, and Scott points out that this commitment was made in "the firm belief that standardization of the language would come about." Where he got this firm belief he does not explicitly say, but his reasons go at least one step further than those of Feathers. Scott's reason is to protect the investment that users have undertaken based on the assumption that standardization was coming.

### Promote More Use

Robert L. Strickler, associate director of the EDP Research Department, Insurance Co. of North America, also has a large investment in PL/I programs. All of INA's large-scale 360 work is being done in PL/I and INA's future plans for 360 work do not include any other language. However, he does not base his reason for wanting standardization on this. He bases it on the belief that progress toward standardization would "promote... more widespread use of the language." He feels that such an increase in the use of the language would be an advantage, presumably to his company.

### Can Handle What Others Can't

L.W. Buchanan, manager of the engineering and consulting section, Small Motors Division, Westinghouse Electric Corp., has another reason for wanting standardization. He points out that there are certain things which the other languages cannot do but which PL/I can. His specific points include the need for computational power, character manipulation, and file generation and maintenance, and he feels that unless Fortran is interlinked with Cobol there is currently no way of programming in a standardized form. He believes that PL/I has all the source language features required and that implementing his particular programs costs less when a single source language is used. He backs this up by pointing out that his projects are now ahead of schedule and that the use of PL/I has saved programmer time over and above the estimated costs for alternate methods.

### Standardization Good in Itself

John Seitz, manager of systems research at Raytheon's Missile Systems Division, does not use PL/I as a standard language. He uses Cobol. But despite this, he is in favor of standardizing PL/I. His emphasis is on support for standardization rather than providing an endorsement to PL/I itself.

However, in the executive offices of the same organization, C.Y. Liu, manager of

the IPS technical staff, points out that the corporation has many different types of computer equipment, and while he also endorses standardization as a proper goal, his support is even more influenced by the variety of non-IBM computer equipment.

### Keep PL/I Alive

Yet another reason was implied by D.E. Crowley, manager of the facilities in the Information Services and Computer Sciences Department, Standard Oil Co. (Indiana). Apparently Crowley is worried not so much about the usefulness of PL/I as whether it will continue to survive. He notes that much water has flowed under the bridge since IBM's initial announcement of the language, but he says that he feels that there is still a need for a

language with both the arithmetical and logical power of Fortran and the character-handling capabilities of Cobol. PL/I, he says, appears to be the only compiler combining these attributes in a single language. He expects the need for such a compiler to increase in the future and says that he is very interested in having PL/I remain alive.

### Simply Superior Language

B.A. Rosenblatt has no such doubts about the continued vitality of PL/I. He is in the Computer Services Department, Standard Oil Co. of California, and anticipates that PL/I will become the predominant program language in the future. He has told his programmers that PL/I is a potentially superior language to either Cobol or Fortran and that it is to be an

acceptable language for use in the company in addition to Cobol and Fortran.

### Reduce Consent Program Maintenance

Another PL/I user, F.C. Davidson, Jr., manager of data processing, Sylvania Electric Products, admits that his company's principal motive in supporting PL/I standardization is a selfish one. His organization has approximately 50 programmers developing and maintaining 2,000 PL/I programs. With an investment of this magnitude, he believes that it is very important that PL/I be standardized.

### Still in Development

Whether standardization would really help him in view of the fact that he already is committed to these PL/I programs

(Continued on Page 10)

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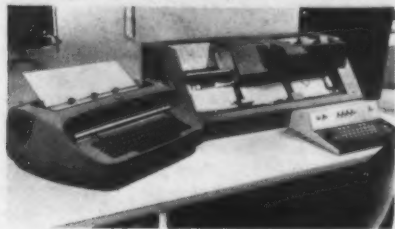


# Origin Point Data Collection Uses Standard Keyboard

OAK FOREST, Ill. — A point-of-origin data collection system, aimed at a market to include the preparation of invoices, statements, shipping orders, and like documents, has been announced.

Called the Datacon 440, the system features standard typewriter functions, thus eliminating special keypunch training, but produces standard punched cards.

The manufacturer claims average strokes of 12,000 to 14,000 per hour, allowing faster throughput, and minimizing balanc-



ing time needed for corrections.

The system produces hard copy, interfacing with a keypunch to give card output.

Lease rates will vary from \$37 to \$56 per month.

Datacon International, 15158 S. Cicero Ave., Oak Forest, Ill. 60452.

## 9600 Bits/Sec Modem

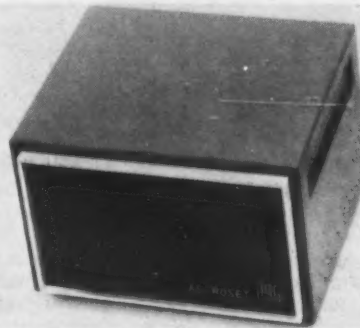
Modems with data rates from 2,000 to 9,600 bits/sec, over either private or dedicated leased lines, are newly-offered by Astrocom Corp.

The Astrojet 200 series is said to be available in many configurations, including simplex, half or full duplex, and party line situations.

The company says they provide complete system installation service, plus one-day interchange maintenance.

Unit prices begin at about \$1,560, with the manufacturer offering both complete

## New Products



It is said to be easily interfaced with the 024, 026, or 029 keypunches.

systems installation and OEM components.

Astrocom Corp., 293 Commercial St., St. Paul, Minn. 55106.

## Converting Slide Rule

Hexidecimal-to-decimal conversion by a circular slide rule is now offered by Science Spectrum, Inc. This follows another recent announcement of a similar octal-to-decimal converter.

On one side of the slide rule are the hex and decimal scales, with C, C1, A, and L-type scales. The other side has the conversion scales.

Accuracy of three or four significant figures is claimed. Both units, decimal or octal, cost \$8.50, with quantity discounts.

The converters are delivered from stock. Science Spectrum, Inc., 2613 De La Vina St., Santa Barbara, Calif. 93105.

Here at last is a fast and flexible system complete with a package of time-series analysis software that, alone, is well worth the entire price. Featuring conversational interaction, the programs are fully tested and ready for use.

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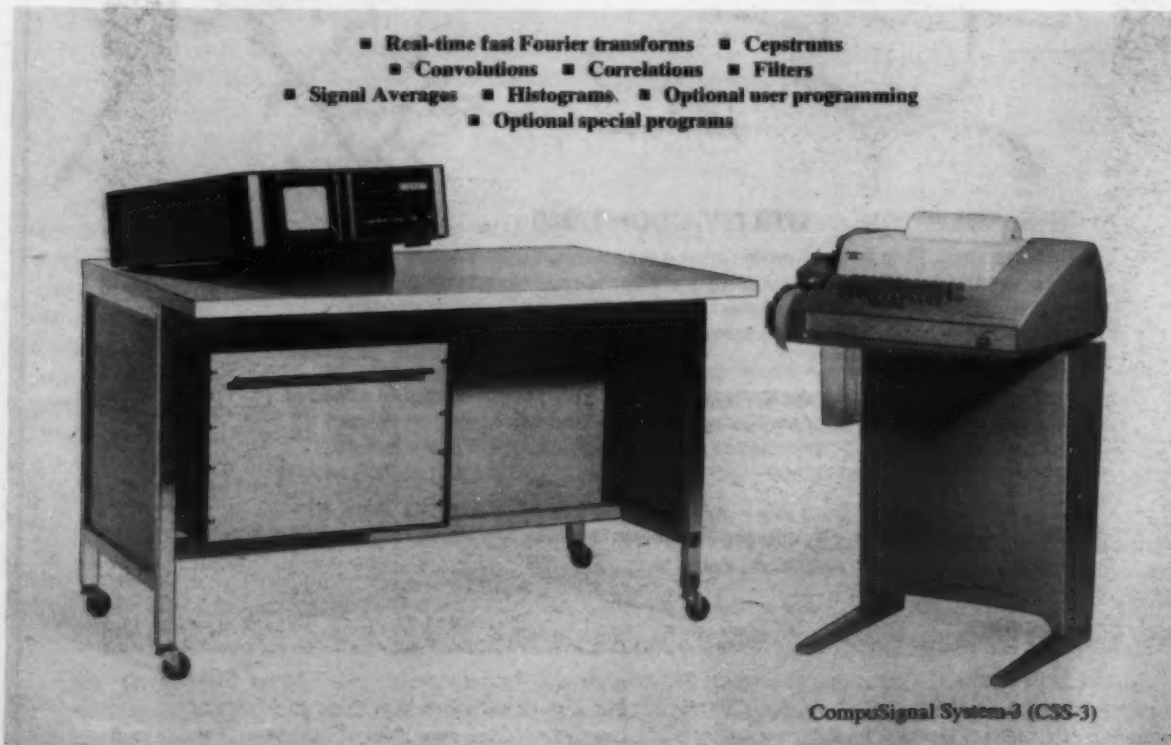
The Model CCS-3 digital signal processing system, now available for immediate delivery, is a pioneering achievement of the newly formed Computer Signal Processors, Inc. CSPI is the first company devoted exclusively to development and production of digital computer systems for signal processing. Write for descriptive literature: Computer Signal Processors, Inc., 209 Middlesex Turnpike, Burlington, Mass., 01803. (617)891-5564.



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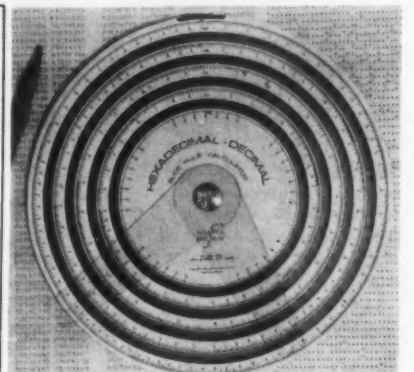
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## PL/I Standardization Favored by Users

(Continued from Page 9)

grams is thrown into some doubt by the reasons advanced by E.J. Kline of the Monsanto Co. Monsanto is using PL/I only on a limited basis although the firm plans a larger commitment in the future. He supports standardization because the best time to introduce meaningful standards is while the language is still in development.

### Vendor Independence

D.A. Alexander of General Dynamics also supports PL/I standardization although only a minority of the firm's applications are written in PL/I. GD's Electronics Division is attempting to remain as vendor-independent as possible, and he feels that standardizing PL/I would encourage other vendors to produce PL/I compilers, allowing his division to make more use of PL/I.

### Avoid Vendor Unilateral Action

Thomas J. Reno of General Motors also has considered the problem of getting other manufacturers to support PL/I compilers. His fear is that language extensions and compilers for non-IBM computers would generate only confusion if such action were taken unilaterally by the various machine manufacturers. He feels that standardization is absolutely necessary if language development is to proceed in an orderly fashion, following guidelines set by some organization independent of the computer manufacturers. He points out that GM projects at the end of 1968 represented 69 man-years of effort and that he had been committed to using PL/I since the days of early prerelease compilers.

These, then, are some of the reasons why users want to have PL/I standardized. CW feels that most of these reasons are valid, but that there are major problems involved in standardization. Next week we will consider why, in the face of these reasons, standardization of PL/I has not proceeded further than it has.



# Shades of the Red Baron, It's a Fokker Tri-Wing!

BOSTON—Not all of the hardware at the Spring Joint Computer Conference will be new. In fact, some of it will be more than 50 years old.

Capitalizing on the recent interest in World War I aircraft, one software company will ex-

hibit Fokker DR-1, the type flown by the Red Baron, and a Nieuport 28, the type flown by air-ace Eddie Rickenbacker early in the war.

The planes are being brought from the Old Rhinebeck Aerodrome at Rhinebeck, N.Y.,

which has one of the world's largest collections of old-but-air-worthy aircraft.

The planes will be on display at the North Plaza on Boylston Street, adjacent to the War Memorial Auditorium. SJCC visitors will be able to have themselves photographed posing in front of the planes in a 1917 flying jacket, goggles, and helmet. Rhinebeck flying authority Jim Leggett will be on hand to answer questions about the planes.

Interest in the Red Baron, Manfred von Richthofen, and his 110-hp, 155-mph tri-wing has sprung from the adventures of Snoopy, the beagle, in the comic

strip "Peanuts." The French Nieuport 28, with 160 hp and a speed of 128 mph, was used by the American Expeditionary Force early in America's part in the war.

The exhibit will be presented by Commonwealth Computing

Inc., Waltham, Mass. Not surprisingly, Commonwealth is linking it to the firm's "plane truth" campaign to present what Commonwealth President Dick Trexler calls "the facts on the climbing costs of in-house programming."



Fokker



Nieuport



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## 33 Days to DPMA Show

# Short Course Concept to Be Used

PARK RIDGE, ILL. — A "short course concept" is embodied in the program for the DPMA 1969 International Data Processing Conference and Business Exposition scheduled for Montreal, Canada, June 16-19.

The conference seminar program, structured in ten series covering topic areas of technical and general management, is the most expansive in DPMA conference history.

Ten simultaneous seminars will be underway for two days beginning on June 17 and concluding on June 18, with 30 series seminars being conducted in three consecutive time periods.

A wide range of "open selec-

tion" general-interest seminars covering such areas as general management, personal improvement, education, social implications of computers, new technical trends, and the computer utility for tomorrow's business is also included in the program.

Eleven such seminars are scheduled for June 19, providing a total of 41 seminars for Conference participants.

In addition, a special seminar of exceptional wide-ranging interest has been scheduled for evening presentation on June 18. The seminar will focus on recent developments in the "Certificate in Data Processing" (CDP) program initiated by the DPMA in

1961 as an industrywide effort to evaluate and recognize knowledge and proficiency in data processing. It will be open to all conference attendees at no cost.

A number of DPMA seminars also will be offered on a bilingual basis in Montreal, with immediate translation for the convenience of French-speaking conference participants.

The DPMA Business Exposition set to unfold in Montreal will also be the largest in association history. Exhibitors will include all traditional U.S. manufacturers and suppliers in addition to a number of Canadian firms servicing the data processing community.



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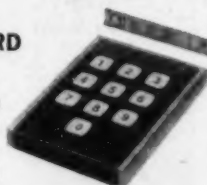
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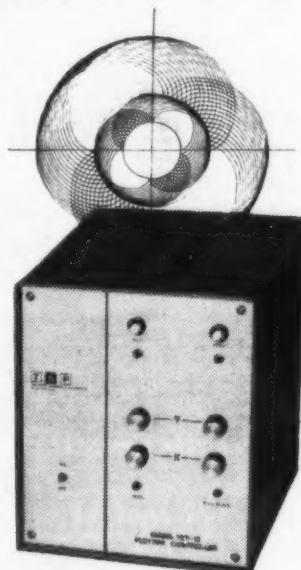


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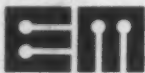
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# OCR-B Not Ready for Standardization Yet, X3 Says

NEW YORK — The attempt to standardize OCR-B, an easily readable optical character set, received a major rebuff last week when the X3 Committee of the USA Standards Institute decided it was inadequate at present.

At the same time, X3 removed consideration of lower case characters from the optical recognition area and passed the matter over to the office machines group (typewriters, etc.). The significance of this

action was unclear because work was already under way on lower case characters for OCR-A. OCR-B already has lower case.

The basis of the rejection of OCR-B was a finding by X3.1 that the character set had many "conflict pairs," sets of characters such as 2 and Z, 0 and upper case O, which could be confused by reading machines.

B. Joseph Vincent, chairman of X3.1, told CW that this finding had been based on an analysis which included only 79 characters of the 113 character repertoire and that even with this reduced number of characters the error rate had been forecast to be unsatisfactory.

He noted that another analysis had been performed in Europe which gave opposite results. However, he pointed out that the European analysis was based on the assumption that each letter had a discoverable center line. Vincent said that the committee had found that this was not so in practice.

The future of OCR-B, he said, was going to be discussed at a forthcoming Montreal meeting with the European Computer Manufacturers Association's TC/4 committee. He expressed the hope that the two committees would not become known respectively as the OCR-A committee and the OCR-B committee. "Both committees should make every effort to avoid involvement in the personal and political struggles surrounding

the OCR-A versus OCR-B question," he said.

Vincent said that it was possible that by modifying the OCR-B characters an acceptable font might be developed but that it would require considerable modification. He also pointed out that the major

known working installation of OCR-B uses a million dollar Recognition Equipment machine reader and still was having problems. "If one of our most sophisticated machines can't handle it properly," he said, "what chances are there for someone to produce working \$100,000 machines, which we need?"

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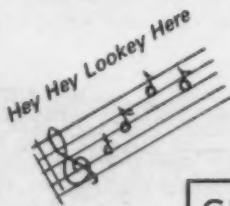
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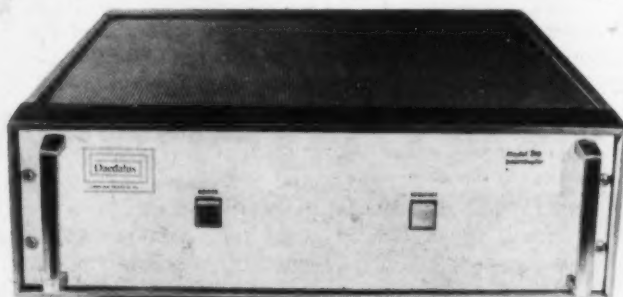
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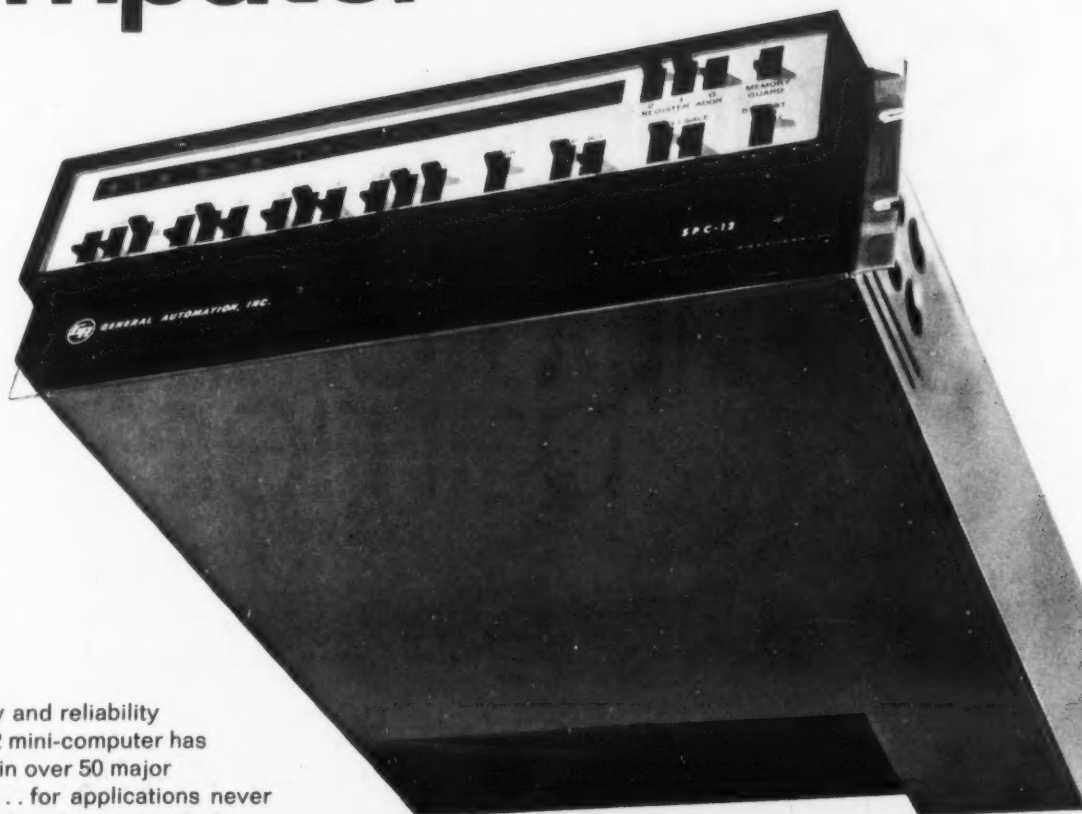
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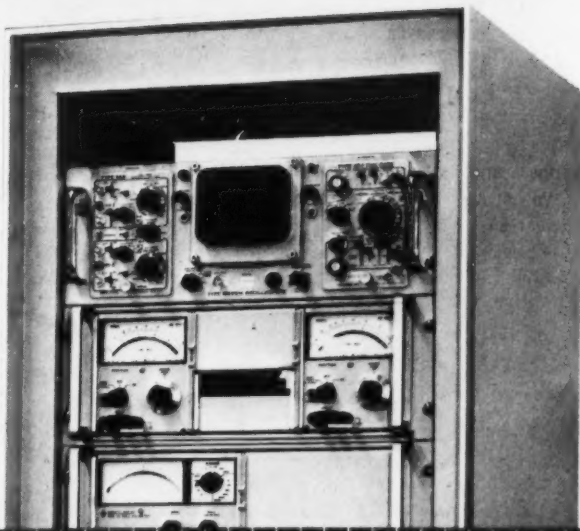
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# Adapso Asks Congress to Bar Banks From DP Service

WASHINGTON — National banks would be prevented by law from offering data processing services under an amendment proposed by the Association of Data Processing Service Organizations.

The amendment to the so-called Patman Bill on one-bank holding companies was suggested by Adapso spokesmen testifying before the House Banking and Currency Committee. Rep. Wright Patman is its chairman.

The bill would force banks to divest themselves of nonbanking activities within five years. Adapso opposed another bill, proposed by the Nixon administration, charging that it would expand the scope of activity permitted by one-bank holding companies.

Because of a loophole in the 1956 Bank Holding Company Act, holding companies with only one bank can engage in almost any activity. The number of one-bank holding companies has jumped from 117, before the 1956 act was passed, to 783 now. It is believed that such companies control 40% of the total banking industry.

Bernard Goldstein, president of United Data Centers, Inc. of New York and a member of Adapso's board of directors, told the committee that "banks have been permitted to infiltrate areas outside the traditional boundaries for such institutions — the marketing of various data processing services, insurance sales, travel agency activities, agricultural management, etc."

The Adapso testimony warned of the danger to currency and credit brought about by banking institutions entering fields of

business activity where they have little or no expertise, thus creating financial risks for both depositors and stockholders.

Legislators were urged by Adapso to act promptly to "return banks to the business of banking before the relatively small businesses so vital to our economy are mortally wounded if not completely destroyed."

Three bills to regulate one-bank holding companies are currently under consideration.

Under the Nixon administration's proposal, one-bank holding companies would be restricted to activities included in lists written by the Federal Reserve Board, the controller of the currency, and the Federal Deposit Insurance Corp. Under this bill, these agencies would decide whether banks had the right to enter into data processing services.

Patman's bill would order holding companies to divest themselves of nonbanking interests within five years. This is the bill supported by Adapso, although the group suggests two amendments: statutory exclusion of data processing from the list of allowable bank activities, and increased scope of judicial review.

Another approach has been taken by Sen. William Proxmire,

D-Wis., who has proposed that companies be allowed to engage in nonbanking activities until June 30, 1971, but at that time the number of one-bank holding companies and their activities would be frozen.

Adapso has fought two rounds in the courts in the fight to prevent national banks from offering data processing services and is now seeking to have the case reviewed

## Sanders cracks the computer-input barrier.

### Moe Is Bugged; Gallagher Asks, Is Man Next?

WASHINGTON, D.C. — "An elk named Moe in Yellowstone National Park has been connected to a recently launched satellite, Nimbus 3. The comings and goings of Moe as he does his elk thing are now an inerasable part of a scientist's computer," Rep. Cornelius E. Gallagher, D-N.J., declared last week.

"This use of wildlife," he told the House, "demonstrates a perfectly plausible way for some individuals to stifle the life of their fellow humans. Everywhere, our technology is producing new means of invading, indeed destroying individual privacy in America."

Gallagher then noted his continuing opposition to the establishment of a national data bank which would collect and keep dossiers on the lives of all Americans. He concluded, "The example of Moe provides an eerie lesson for we human beings. Who can say that the bugging of Moe is not a mere prelude to the bugging of man? Who can say that the insatiable thirst for statistics may not someday be quenched by the creation of a total surveillance society, in which the movements of man, like the movements of poor Moe the elk, are open to general scrutiny?"

Your third-generation computer is still held back by first-generation input. One look in your keypunch room will confirm that. It takes time to punch cards, verify them and convert to magnetic tape. And good keypunch operators are harder and harder to find.

The new Sanders System 6000\* Display Data Recorder can help bring computer input out of the keypunch room. And get data into your computer faster and at less cost. How? It's simple.

The screen of the System 6000 Recorder is formatted to show a replica of the source document. The operator

merely fills in the blanks on the screen using a typewriter-style keyboard. She can verify the data instantly and transfer it to computer tape automatically. Before recording she can verify and correct errors by backspacing, inserting, deleting or overtyping data.

Formats are loaded conveniently from a replaceable magnetic tape cassette. And the System 6000 Recorder can display up to 1,024 character records. Compare that to 80 in a punched card, or 160 in key/tape devices. Output from as many as twelve units can be automatically merged on a single tape

reel. No tape pooling necessary.

It's a proven fact. Just about anyone with basic typing skill can become qualified on System 6000 Recorder after only 10 minutes' instruction. Crack your computer's input barrier. It's simple. Call your nearest Sanders sales office or contact: Marketing Manager, Data Systems Division, Sanders Associates, Inc., Daniel Webster Highway South, Nashua, New Hampshire 03060. Or call: (603) 885-4220.



\*TM Sanders Associates, Inc.

See the System 6000 Display Data Recorder at the Sanders exhibit (Area BB) at the Spring Joint Computer Conference



# Panel Terms Data Banks Inevitable, Asks Safeguards

By Joseph Hanlon

CW Staff Writer

BOSTON — National data banks are inevitable; therefore people should be concerned with safeguards rather than with preventing data banks. This was the conclusion of a panel discussion on "Privacy and the Computer" recorded for broadcast by WBUR here in June.

The program will be distributed by National Educational

Radio for broadcast by other educational radio stations later.

The panel consisted of two computer people plus the chairman of the Massachusetts Civil Liberties Union and a philosophy professor. The members split sharply on when action should be taken, with the computer people saying "don't worry" and the other two panelists declaring that action is necessary now.

Bernhard W. Romberg, head of the Information Technology Group at Arthur D. Little, Inc., facetiously proposed a simple way of stopping the data bank: "When the systems analysts present a proposal for a data bank, tell them to go back and make it more comprehensive. When they come back in a couple years, tell them to go back and make it really comprehensive. By then the systems analysts will drown

in their own data, and there will never be a data bank."

## Says Fears Overdrawn

Romberg argued that "fears of large-scale systems are overdrawn. We are technologically a long way from developing an all-encompassing system." He concluded: "Just because it can be done doesn't mean it will be done. A gradual approach to legislation is sufficient."

He was supported by another panelist, Eliot Lumbard, a computer man and attorney, who remarked that "most of the things that people fear won't happen because they are just too complicated and too expensive."

## Argument Challenged

Romberg's argument was challenged by the noncomputer people on the panel and by the president of Cambridge Computer Associates, Victor Oppenheimer, during a question period later in the program.

"There is a false sense of complacency about technological progress," Oppenheimer declared. "We are not that far away; just consider the progress in the last 10 years. These problems will be very real tomorrow." He went on to point out that some of the things Romberg relegated to the future are already possible and noted that the data cell was announced over five years ago.

Lumbard countered that one does not change highway designs based on predictions of future cars, but waits until they are built. Similarly, he argued, one should wait until problems with data banks arise before dealing with them.

Lumbard participated in the establishment of the New York State Identification and Intelligence System, a large computer-based service for the New York State criminal justice system. Before working on that, Lumbard investigated people who were at an alleged Mafia meeting in Apalachin, N.Y. During the investigation, he found information about just one person at the meeting was spread through 200 uncorrelated files. Lumbard cited this as one of the reasons to pool information.

## 600,000 Records on File

Lumbard explained that the system now contains 1.7 million fingerprints and 600,000 summary criminal histories. He declared that it had an "overt" civil liberties purpose: "If someone is arrested for a minor offense, he would want bail, or he might want to plead guilty to get it over with. Previously, the state might object and ask for time to check his record and to see if he was wanted. Now, they get the necessary information in two and a half hours, and if he has no record or is not wanted, he can be released."

But Gerald Berlin, chairman of the Massachusetts Civil Liberties Union, cited two difficulties with a system such as New York's. First, he noted that one out of every two citizens has a contact with the criminal law enforcement system more serious than a motor vehicle violation. Even though only people with criminal records are included in the system, he declared, this means that "half of us will be entombed in one of these systems."

Second, Berlin said that the U.S. Supreme Court had just ruled that fingerprints gained in a dragnet could be expunged from police files. He doubted that New York was able to remove these fingerprints from its files. "I suggest that this kind

(Continued on Page 20)

It's  
simple.



# Honeywell Will Market TI's Data Collection System

HOUSTON, Texas — Honeywell's EDP Division and Texas Instrument Inc. have announced here that TI's Tacticom, a data-collection system for large-scale manufacturing firms, will be manufactured for, and packaged under, Honeywell's name. The

announcement was made in a joint statement by Robert P. Henderson, marketing vice-president of Honeywell, and T.E. Smith, manager of TI's Industrial Products Division.

The agreement, a nonexclusive arrangement extending until

mid-1972, states, in part, that the device will be built to Honeywell's specifications. TI will retain the right to market the system directly to its own users. No dollar figure or quantity was announced.

"Today's need for fast input of

data for computer-aided management decisions carries with it the requirement for accuracy and high reliability," Henderson said. "After an intensive evaluation, we determined that the TI system will significantly expand Honeywell's capability for

manufacturing firms — the largest single group of installed Series 200 computer systems."

"We originally conceived the system," said Smith, "to solve some of our own control problems. Because the system has proved itself in more than two years of use in our own facilities, and has been installed and used successfully by other businesses in other parts of the U.S., we know that it is sound both in theory and application."

In discussing the agreement with other members of the industry, *Computerworld* was told that this was a logical step for Honeywell, since its product line did not previously possess anything of this type.

## Panel Terms Data Banks Inevitable, Asks Safeguards

(Continued from Page 19)

of information can never be removed from the system," he declared.

### Call for Awareness

The fourth panelist was Huston Smith, professor of philosophy and religion at MIT. "I expect to see such data systems increase," he said, "and they must increase by the very nature of the complexity of our society. But you must surround such systems with awareness and with safeguards."

The attitude of the general public was summed up by a member of the audience, Zola Levine, during the question

period. She pointed out that a great deal of information about a person was already easily obtainable, including credit, scholastic, criminal, and marital data. "If all this is combined, then there is no place to hide," she charged.

Another questioner, a Boston University professor, made the point that children are tested all

of the way through school. These tests include psychological tests, and all test results are kept by the school. He was concerned that this sort of information might be included in computerized records. He concluded by noting that just as a businessman considers the effect on his tax status before making a business decision, "someday an individual

will say 'can I do this or will it adversely affect my computer record?'"

"Privacy and the Computer" is the first of a series of programs planned by WBUR to explore in-depth the effects of the computer on modern society. The series is produced by WBUR in cooperation with Cambridge Computer Associates.

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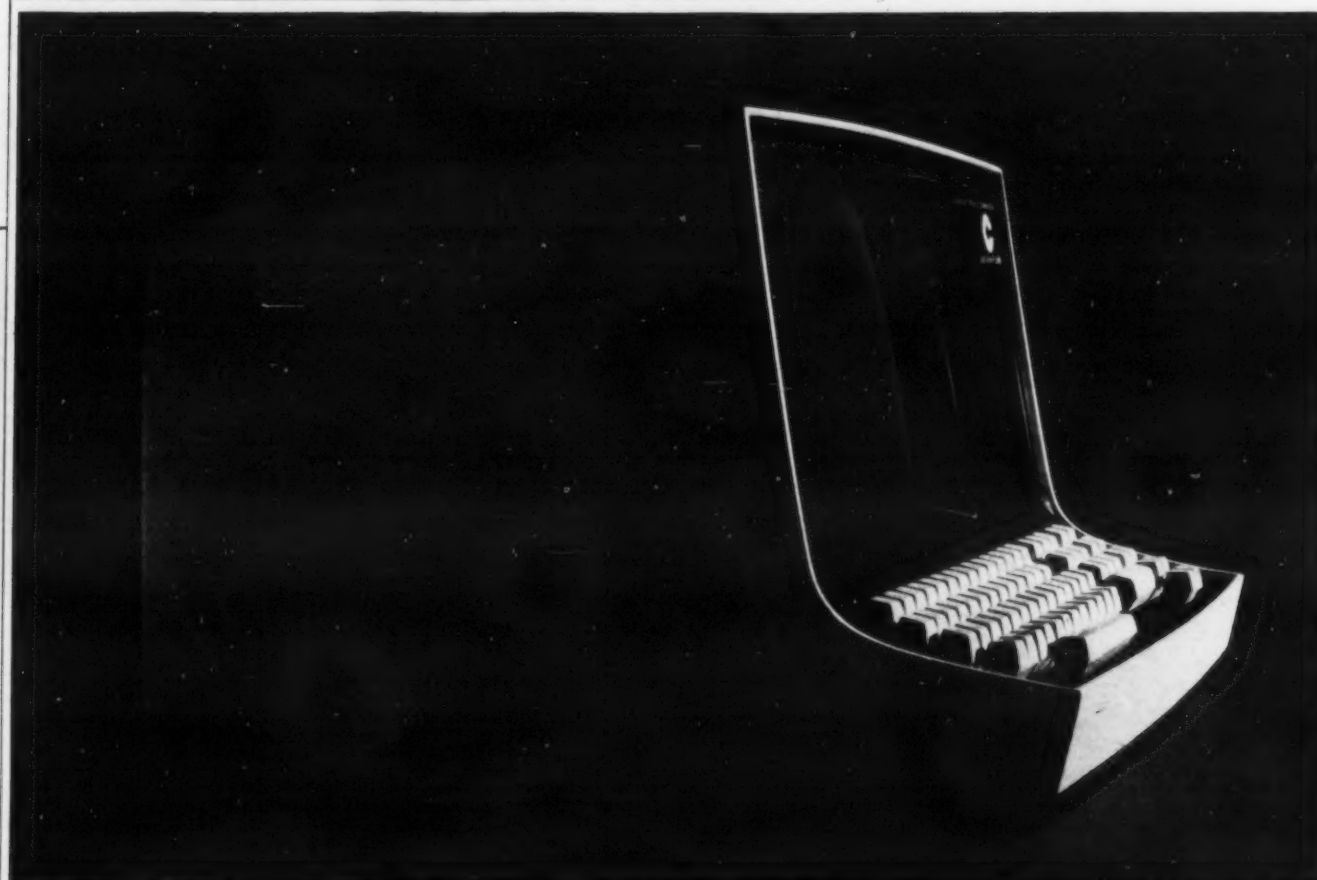
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Because the 3300 is not shackled by the limitations of a mechanical printer, it can make available data transmission rates of up to 600 bits per second

standard, and up to 4800 bps with optional speed buffer. This means the interactive user enjoys faster response from his remote computer; accordingly, his "on-line" time will shrink while his productivity goes up.

The 3300 is noiseless — no hum or clatter of keys to intrude upon the user's concentration. It comes packaged in a handsome, totally self-contained unit, comparable in size to an executive typewriter, which blends well with today's office environment. The female help will love the 3300's appearance, as well as its ease of usage.

We think you'll like it. For further information, simply write to Computer Terminal Corporation, P. O. Box 6967, San Antonio, Texas 78209.



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# Announcing the Summer Joint Computer Conference.

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So don't miss the Summer Joint Computer Conference. To register, use the form below.

Mail to: California Office Systems Corporation, One Maritime Plaza,  
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☐ Splendid idea! I was looking for a good excuse to visit San Francisco. Expect me about \_\_\_\_\_. In the meantime, please send me your Free, Illustrated Brochure on the Cal Systems Computer.

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Checking printout from small DEC PDP-8/I is Irving Engelson, chairman of the electrical engineering department at Mercer County Community College.

## Future Engineers to Get Computer Training in Fall

TRENTON, N.J. — Full exposure to the intricacies of the computer will be given each engineering student at Mercer County Community College next fall.

This is as a result of a training program now in final stages of development.

"Unless a student engineer knows at least the ABCs of the computer, he just is not ready," said Irving Engelson, chairman of the electrical engineering department.

### Exposure

Engelson's program is not designed to make computer programmers out of the 300 to 400

students who will take part in it, but it is meant to give them exposure.

If they want to go deeper into the subject, they can use the computer on their own time, Engelson explained.

A Digital Equipment Corp. PDP-8/I was selected for the program for its physical size, and because there are so many used in education that a wide variety of programs is available, according to Engelson.

### Additions to Unit

Engelson has added more core memory, an oscilloscope, a 32,768-word disk storage unit, an analog-to-digital and digital-to-analog converter and two Teletype input devices to the basic system.

While all engineering students will receive exposure to the computer, those majoring in electrical engineering will go into more detail.

Also under consideration by the professor is the development of special courses for architecture and civil engineering students and its use by faculty members doing research.

## Catalog System At El Centro Is Automated

DALLAS — El Centro Junior College has converted its library cataloging system from a book catalog to a system which combines the automation of the computer with microfilm.

This approach is called micro-mation.

A master record of library holdings is maintained on magnetic tape in the computer center in a format similar to a microfilm frame.

### Microfilm From Tape

A 16 mm. microfilm is prepared directly from the magnetic tape through the use of conversion equipment and installed on a spool in a 4" x 4" cartridge.

This cartridge is used with an inquiry station — a high speed microfilm viewer — loaded in much the same manner as a cassette tape recorder.

The inquiry station displays the catalog one frame at a time on a microfilm scope. Through push-button control, the catalog may be passed in front of the viewer in increments of 1, 10, or 100 frames, at speeds up to 100 frames per second. There is also a "fast pass" button which advances or rewinds the entire cartridge in a matter of seconds.

### 100,000 Entries Cataloged

El Centro's present holdings of 26,000 volumes are fully cataloged by author, title, and subject (some 100,000 entries) on 2,700 frames — less than three-fourths of the capacity of a single microfilm cartridge.

This system will be a fraction of the cost of the former.

Plans are being formulated to use the system in such areas as counseling, admissions, and registrar's office.



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## Thirsty Resistors Warn SJCC Officials To Have Plenty of Coke on Hand

PENNINGTON, N.J. — Barry Klein, president of the youthful Resistors group, has warned the

### Added Core Can Double Capacity Of M65 System

WHITE PLAINS, N.Y. — Four additional main storage sizes have been announced for the IBM 360/65 multiprocessing system.

The new storage sizes range from 1,310,720 to 2,097,152 bytes. Present storage capacities range from 524,288 to 1,048,576 bytes.

Monthly rental for the new main storage sizes ranges from \$10,680 to \$41,520; purchase prices range from \$454,050 to \$1,757,400. First customer shipments will be scheduled for the fourth quarter of 1969.

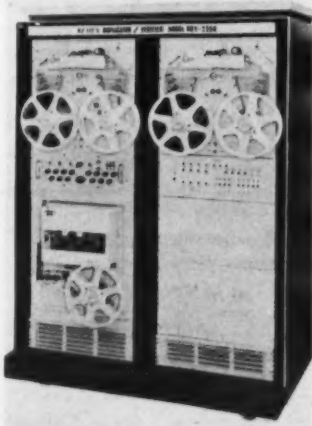
The multiprocessor combines two Model 65s which operate under one control program. They share storage and peripheral units. The Model 65s may run as a single multiprocessing system or as separate stand-alone systems with up to one million bytes of storage each.

### Punched Tape Unit Verifies And Duplicates

HAWTHORNE, Calif. — A punched-tape duplicator/verifier featuring verification at 500 characters/sec and duplication at 225 characters/sec will be introduced at the Spring Joint Computer Conference by Remex Electronics, a division of Ex-Cell-O Corp. The cost is \$13,655.

The RDV-225-G is said also to offer automatic verification of the tape being perforated, automatic search for start characters, lighted display of errors by character, and odd or even parity check.

The company says that deliveries are 10 weeks after receipt of order.



The RDV-225-G punched-tape duplicator/verifier will be introduced at the SJCC. Remex Electronics says the unit can verify at 500 char/sec and duplicate at 225 char/sec.

Spring Joint Computer Conference social-events chairman to have plenty of Coke on hand during the first day, when members of the group will be around to answer any questions arising from their May 13 appearance at the Decus Symposium in Wakefield, Mass.

At the symposium eight members of the group will be presenting their own papers at a workshop dealing with the construction, use, and philosophy of the Trac language. The papers include tutorial introduction, details of interaction scripts, and the architecture of the Resistors' processors.

This is not the first time that the Resistors, a group of teen-

agers from the New Jersey area, have spoken before conferences. In March, three of them spoke at the AIEE meeting in Allentown and also at the annual Princeton Conference on Information Sciences and Systems.

Underlining Barry Klein's appeal for more Coke at SJCC social events is this photo of two of the Resistors seeking refreshment at the third annual Princeton Conference and finding plenty of liquor, but inadequate Coke. The pair is Nat Kuhn, right, manager of software, and John Levine, second from right Kuhn's assistant.



*If the 1108 is a MAXI,  
And the PDP-8 is a MINI,  
What's a MIDI?*

# RC 70

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\*MIDI COMPUTER: Submicrosecond 16-bit computer compactly packaged with megacycle throughput word rate for OEM and system requirements. The MIDI classification includes the RC 70, 516, SIGMA 2, 2116B, 810B, 1700.

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# Credit Bureaus Using 'Private Eyes': Gallagher

## How Information Is Gathered and Used

By Joseph Hanlon  
CW Staff Writer

WASHINGTON, D.C. — Private investigators are being used by a computerized credit bureau to gather information, charged Congressman Cornelius E. Gallagher (D-N.J.). Gallagher is chairman of the Special Subcommittee on the Invasion of Privacy, and has been particularly concerned about computers and privacy.

"Credit bureaus are hiding behind the skirts of Welcome Newcomer hostesses to gain personal information about the living habits of Americans," charged Gallagher. "By using the subterfuge of welcoming new people while disguising their true

data-gathering purpose, the employers of these ladies are clearly invading the traditional privacy of the American home."

Washington Credit Bureau Manager Edward Garretson's contention that information given to his Welcome hostesses was "very much akin to what a guy tells the corner bartender," was commented on by Congressman Gallagher:

"When you fall off the wagon, you may tell a lot to the bartender in the wee small hours, but it stops there. But when you fall off Mr. Garretson's version of Welcome Wagon, you fall into a fishbowl where any subscriber of the 2,200 ACB member bureaus can learn your family's innermost secrets."

*Congressman Gallagher has denounced the Welcome Newcomer service as being an invasion of privacy. Here is a description of the service concerned.*

Like the better-known Welcome Wagon, Welcome Newcomer greets the new resident, gives him gifts from local merchants, and gives local merchants information on the new resident. But Welcome Newcomer provides another service: It gives the local credit bureau information which enables it to build a file on the newcomer.

Welcome Newcomer asks two

sets of questions. Answers to the first set are printed and distributed to businesses and churches that subscribe to the service. These questions ask for: name and birth date of husband, name and birthday (not date) of wife, wedding anniversary, number of children, husband's employer, religion, make and year of automobile, list of oil company credit cards, and if home is owned or rented.

Answers to the second set of questions are turned over to the parent credit bureau, but are not sent to subscribers. These questions ask for: previous address, previous employer, and names of

stores with which the family had credit.

According to Patrick Rheaume, vice-president of Chilton Corp. here (owner of Welcome Newcomer and 40 credit bureaus), this information is not entered directly into a person's file. Rather, it is sent to the credit bureau in the city where the person lived previously, and that credit bureau updates the file and forwards it. Rheaume admitted that some credit bureaus automatically obtain files on new residents, whether or not the person requests it.

### Information Use Not Clear

Rheaume declared that "it is made very plain to newcomers that the information is being asked for merchants." But it may be less clear that the information goes to the credit bureau, too. Rheaume conceded that not all of those interviewed realized that the information goes to the credit bureau, and he claimed only that "in a majority of cases, the newcomer knows why he is being asked these questions."

### Computers Are Involved

The Dallas credit bureau, which operates a Welcome Newcomer service, is one of two that have computer installations intended as prototypes for the credit bureau industry [CW, Mar. 19]. Rheaume stressed that information gathered by Welcome Newcomer hostesses was not entered directly into the computer. But the report supplied by the credit bureau in the person's former city is entered into the computer, and the data supplied by the hostess plays an integral part in obtaining that report.

Rheaume explained to *Computerworld* that the newcomer's former address and the name of his former employer (obtained by the hostess) were used by the credit bureau in the person's former city to identify him. The list of stores where the person had credit may include listings not known to that credit bureau, and enables it to compile a more complete file.

The Dallas credit bureau, Credit Bureau Services, is owned by Chilton Corp. Welcome Newcomer, Credit Bureau Services, and Chilton all operate from the same office with the same telephone number (821-7000). All of Chilton's 40 credit bureaus are members of the Associated Credit Bureaus, Inc., according to Rheaume.

He estimates that Welcome Newcomer is operated "in 15 to 20 market areas."

The first disclosure of the connection between Welcome Newcomer and credit bureaus was in the *Washington Daily News*, March 19, 1969. The author of the article interviewed a number of housewives, and in his article said that housewives visited by hostesses "generally indicated no knowledge that the information they provided was going to be sent anywhere."



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PSD Bulletin 7

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# Variety of Sessions Offered at SJCC

The following is an offering of some of the more important abstracts from sessions to be held at the Spring Joint Computer Conference May 14-16 at the War Memorial Auditorium, Boston.

A more complete listing of the technical sessions are in the 69 SJCC program book, which will be available at the conference.

## Montessori Methods

A workshop structure based on the Montessori method, and utilizing both vertical and horizontal interaction in the training of systems programmers will be presented at SJCC.

The definition of the training need; objectives of the workshop; training curriculum; selection process; application of Montessori techniques in the training of programmers; measurements for evaluating success; results of the workshop to date; and the planned

continued upward development of programmers will be covered.

## Computers Test

One subject dealing with the use of a small inexpensive computer to test another computer through the final checkout phases of its production path will be discussed at SJCC.

This task was broken down into two phases of testing.

The first was to diagnose multiple catastrophic malfunctions in a logical manner, and to ready the computer under test for environmental testing.

The second phase is broken down into environmental testing,

and acceptance testing, which is fully automatic.

Technicians have been replaced by using the computer to monitor acceptance tests.

This system will be described.

## On-Line Business

During the first day of SJCC, a session on On-line Business Applications will be presented.

Since these applications are a relatively recent development in commercial computer technology, most of the experience to date has been gained at universities and large government organizations.

Some experts contend that much of the growth in the usage

of on-line systems will be economically justified and that such systems will change business data processing and the manner in which business is conducted, as well as improve management decision-making, business operations, and customer relations.

Others counter that on-line business applications are far fewer than predicted several years ago.

Large numbers of businessmen reject it or say they don't need it. However, there is need for "instant verification" in many cases, but the cost outweighs the need.

The question is: "Where do they go from here?"

## Cryptographic Method

Cryptographic technique is one method to help protect the confidential information which passes over data communication lines and stored in computers.

This general topic session deals with transposition and substitution techniques which can be used to maintain the confidential information processed by computers.

Well known techniques and more advanced techniques, such as the use of random number strings will be highlighted, as well as the relative security acquired by its use.

## Social Effects

Increased participation by information processing technologists in the activities that shape their society will be highlighted at the SJCC on Wednesday.

To understand the social effects of their work; to intelligently guide the application of technology, and to attain a significant role in marshalling interdisciplinary attacks on the problems of society are some of the things that will be discussed.

A panel will establish the basis for the need for this dialogue, and will recommend specific actions to implement the discourse.

Among the issues will be the uses and abuses of computers in urban affairs, and the role of computers in social discovery.

## Time Sharing Systems

Time Sharing Systems is the title of a tech session at SJCC on May 15.

It is concerned with the structure and performance of time shared and multiprogrammed computer systems.

The terms in time sharing are still applied to widely different systems, and comparisons are attempted where no basis for comparison exists.

Distinctions in the range of systems will become more widely understood by the additional explication of actual systems at an appropriate level, by documentation of performance, and by realistic quantitative modeling.

This session will attempt to clarify this.

## Education

Recently a number of committee and institutional efforts have spearheaded development of computer science curricula at the grad-

(continued on page 25)

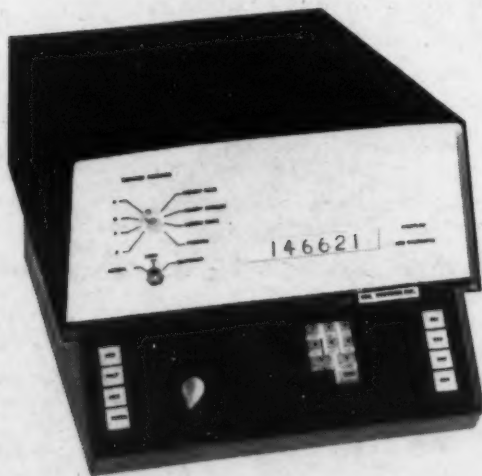
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(continued from page 24)

uate and undergraduate levels in universities.

Those working in this area recognize problems and issues which merit further examination.

What is regarded as a major challenge facing educators of the computer professionals will be discussed at a session titled, Education for Computer Professionals on May 15.

### Software Measurements

The problem of obtaining measurements on the nature of the process of programming language translation will be considered at SJCC during a session called Software Measurements and Their Influence Upon Machine Language Design.

Design of a measurement control center and associated software artifact, incorporated into a specific translator, will be discussed.

Utilizing a number of representative programs, the relative effort spent in various sections of the translation process, by the translator considered, is determined.

Detailed measurements will be tabulated and discussed, as will simple hardware which would facilitate the coding of software measurement artifact.

### Accounting Systems

A session at SJCC will attempt to discover if an accounting system can provide the total information necessary for a manager to perform his function.

One group contends that accounting systems and management information systems are synonymous and that management information systems are merely a new dimension of accounting.

Another group contends that accounting is a specific historical discipline.

A third group claims that management information systems include a larger, more comprehensive statement of the information needs of the business than accounting.

These varying points of view will be represented on the panel.

### Communications

A two-part session during the SJCC will observe two different aspects of computer/communications issues.

The first part offers an examination of actual communication traffic patterns in an operating multiaccess system, and considers a model of the data flow in such systems. There will also be a description of a communications-environment simulator with which an experiment in a realistic, simulated communications environment will be conducted.

In the second part, relevant recent developments on the common carrier scene will be presented and discussed. Included will be changes that will influence the relationship between computers and communication systems.

### Underprivileged

Computers and the Underprivileged will be discussed on May 14 at SJCC.

Past and current accomplishments, and future possibilities for those in the computer profession to open doors to the underprivileged will be presented.

A socially damaged group of people—in the main unemployable—are unable to attain an acceptable position and life in society. This session will attempt to point out that those in the computer profession must help eliminate these social problems and show how this can be done.

### Compilers

Systems programmers, compiler writers, and designers will be interested in a program offered at SJCC called Batch, Conversational, and Incremental Compilers.

Conversational and incremental compilers have evolved as evidence of reevaluation of basic con-

cepts due to changes in the operating environment.

A model of a batch compiler will be presented, then methods will be modified and extended for a conversational programming environment.

Incremental compilation is a new concept to be introduced here. This concept will satisfy the needs of batch and conversational compiling, as well as interactive computing.

Also to be discussed in the session will be a summarization of earlier papers on incremental compilation and potential problem areas.

### Service to Libraries

If computer technology is to play a useful service role in libraries of the future, it must be applied to valid library targets.

The technology must be manageable and it must be cost competitive with alternative methods.

Because of failure to meet these

basic requirements, computer technology has had little impact on library service.

A session titled, Computers in Service to Libraries of the Future will be presented on May 15 at SJCC.

Actual components of a large scale library operation will be reviewed, and candidate areas for realistic computer mechanization will be discussed.

Use of computers in a large cooperative information interchange project will be described, as will the success and difficulties of four library computer projects.

### Large-Scale Software

Managing of Large-Scale Software Projects is the title of a session to be presented May 15 at SJCC.

Early software projects, with the exception of military command and control projects, were small ones carried out by teams of elite systems programs.

In these instances, project management was not necessary since all individuals could readily communicate with each other.

However, when it became nec-

(continued on page 26)

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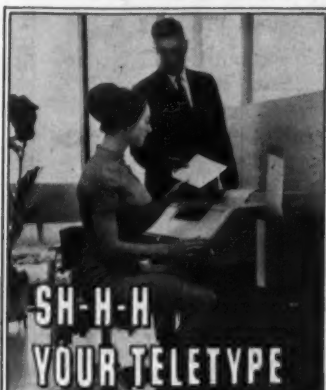
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(continued from page 25)

essary to utilize several hundred people on a software project, because of the large size and the restrictive time limits, management of such projects became necessary.

Each of three papers in this session focuses on this management process.

### Software Tools

Many software tools which are now taken for granted in most application programming efforts are ignored by many large software development projects.

Most large system programs are written in machine language. Debugging is carried on with few

tools more elaborate than octal dumps. Performance analysis and prediction tools are virtually nonexistent.

A substantial number of software programs have been written in higher level languages.

These languages and a source-level debugging aid which enhances the use of higher level languages will be discussed in Tools for System Programming on Thursday at SJCC.

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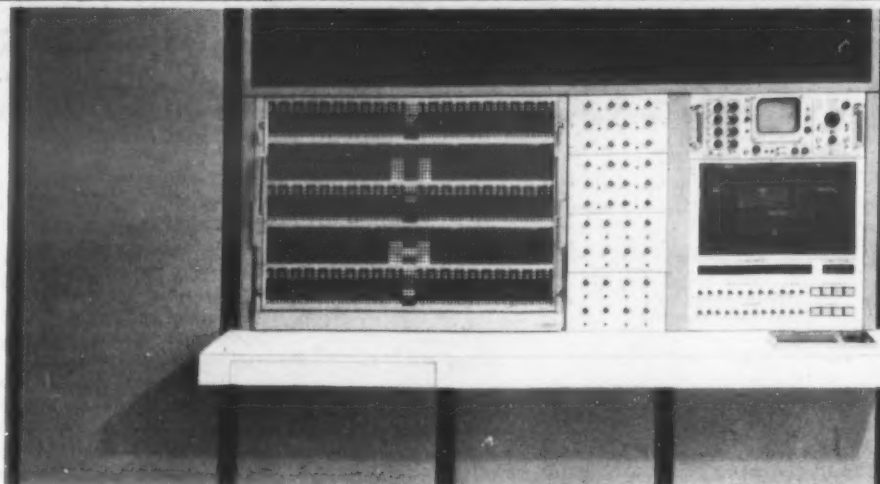
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Medium-sized analog computer from Astrodata, Inc. The C-550 is specifically designed for expansion to hybrid operation.

## Medium-Sized Analog Computer Will Make Its Debut This Week

ANAHEIM, Calif. — Astrodata, Inc. plans to debut its new C-550 medium-sized analog computer at the Spring Joint this year in Boston.

The 100-volt, solid-state C-550 will be operating at the conference. The C-550 offers, in a compact and economical systems package the capabilities of large-scale computers, and incorporates new features.

Designed around a new systems concept, the C-550 is comprised of components such as class zero multipliers and resolvers, and integrated-circuit logic and control cards, which give it power, versatility, and reliability. Modular construction techniques allow the machine to be expanded in the field to large-system operation.

An "integrated" patchboard, with both analog and digital

patching facilities on the same panel, provides easy storage, reduced costs, and quick programming. The single patchboard is screened with a "saturated color" technique which precludes fading, chipping, or blending.

The C-550 is specifically designed for expansion to hybrid operation. It is compatible with digital equipment such as CDC, IBM, SDS, and Honeywell computers, and can utilize a large variety of program languages.

The C-550 operates with the Continuous Systems Simulation Language (CSSL) and Hy-bol in addition to standard languages such as Fortran and others developed initially for use by the large-scale Comcor 5000 Analog/Hybrid computer.

Standard-system production engineering of the C-550 allows the cost factor of a basic unit to start at \$40,000, with a delivery time of from three to six months.

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## Talking Computer to Aid With Theory of Computer

BOSTON—Visitors to the Electronic Associates, Inc. booth at the Spring Joint Computer Conference will be treated to the sounds of a talking computer assisted by a "moon-maid" to explain the company's new analog/hybrid computer, the EAI 7800.

The talking computer, known as Sim, is believed to be the first voice-actuated computer display program ever demonstrated. Sim will introduce the new 7800, operating in a hybrid mode with an EAI 640 digital computer.

One demonstration scheduled is

a simulation of the Apollo 8 moon trip and the proposed moon landing, using the 7800 and a sophisticated display system. Visitors will be given an opportunity to pit their skill against the 7800 in a lunar landing using the lunar excursion module simulation.

The 7800, a new 100 volt, analog/hybrid system with a capacity of up to 294 computing amplifiers, can be configured in any size from 30 amplifiers on up. Many control and programming features are available. The system can be expanded through the functional console right in the field, the company said.

EAI is also offering a line of 7800 accessory equipment.

## Sicbio to Sponsor Session on Hospitals

BOSTON—The Special Interest Committee on Biological Data Processing (Sicbio) will sponsor a session on "The Status of Shared Computer Systems in Hospitals" in conjunction with the SJCC.

The meeting, to be held Tuesday, May 13 at the Sheraton-Boston Hotel from 1-5 p.m., will be chaired by Stephen J. Siegel of Bradford Computer and Systems, New York.

Small and medium-sized hospitals are beginning to turn to the shared computer approach as a means of minimizing their data processing costs, and maximizing their data processing benefits.

Among those participating are the following: **Speakers:** Alan Ez-zell, G.E.—Medinet; Richard Jamieson, New Jersey Hospital Assoc.; Conrad Moe, Travelers Co.; Alan Greer, Medical Information Co.; Darrel Gubrud, Minnesota Blue Cross.

**Panelists:** Mort Kessler, Hospital Council of Maryland; John Anderson, Health Management Services; Gene Gallagher, Hospital Assoc. of N.Y.; Byron Stuckey, National Data Communication.

For further information, con-

tact: Stephen J. Siegel, Bradford Computer & Systems, 4 W. 58 Street, New York, N.Y. 10019.



## Herman Lukoff To Be Honored

BOSTON—Herman Lukoff, a pioneer in computer development for more than a quarter century, will be honored with the fourth annual W.W. McDowell award at the 1969 Spring Joint Computer Conference, May 14-16.

The award, presented by the Computer Group, Institute of Electrical and Electronic Engineers, through a grant from IBM, will be given to Lukoff at a banquet May 15.

Lukoff is Engineering Director of Research and Advanced Development Techniques for Univac's Data Processing Division.

## WE ARE NOT

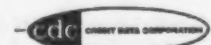
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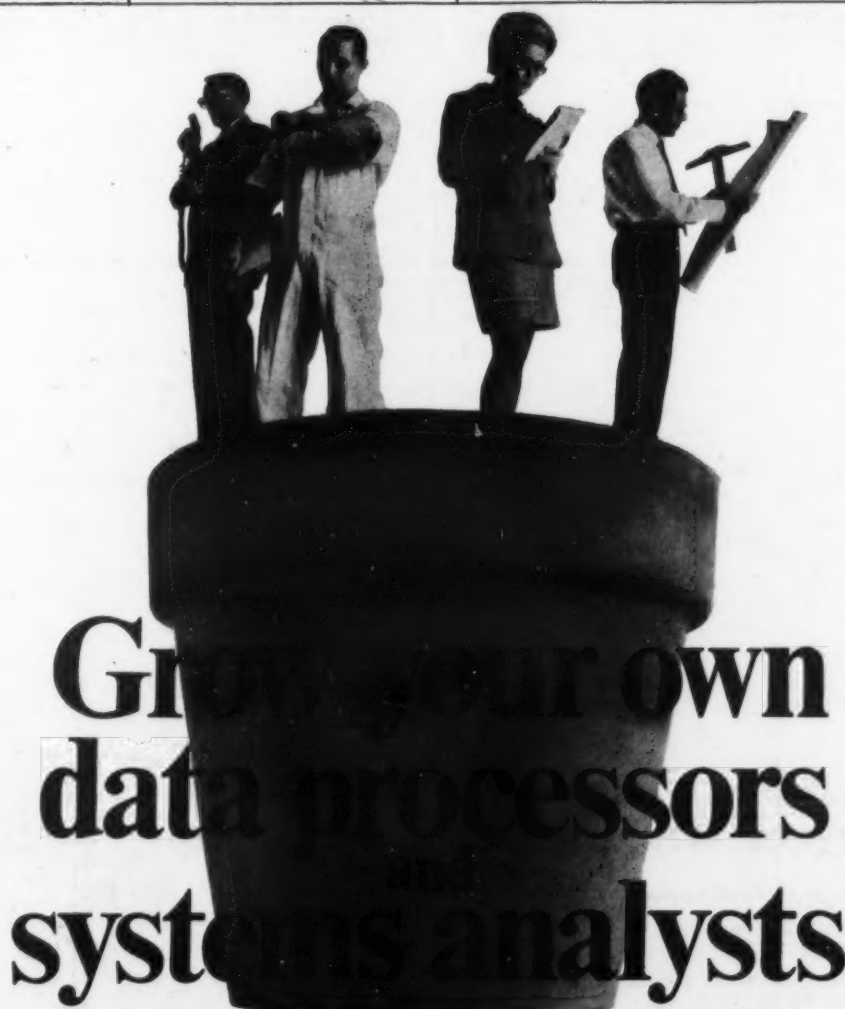
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## Astroverter Coupled Into The 2016 Series System

ANAHEIM, Calif.—Incorporated into the display at Astrodata Inc.'s booth at the Spring Joint Computer Conference this year will be the new Astroverter. The device will be coupled into the 2016 series data-acquisition and control system.

The device is being shown as a 12-bit analog-to-digital converter, although the company claims that its flexibility enables it also to be used as a multiplexer, a digital-to-analog converter, a sample-and-hold amplifier, a buffer amplifier, or any one of over 1,000 instrumentation applications.

An individual unit will be displayed on the stand. This unit's configuration can be changed at will by visitors, using the family of Astrodata plug-in integrated-circuit cards.

All cards are identically 5 x 5 inches in size, and can be pow-

ered from the built-in power supply, which is housed in the 17-inch high Astroverter rack with 16 card slots.

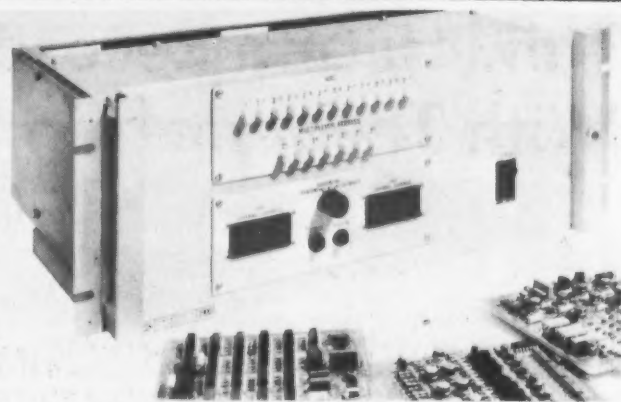
### Real-Time Applications

Due to its high speed, the 3900 Astroverter is useful in process control, hybrid computing, and other real-time computer applications.

Digitizing requires only 5 microseconds, while multiplier switch-

ing, including amplifier settling time, is less than 5 microseconds. Throughput rate is 100 KHz.

As a 16-channel multiplexed analog-to-digital converter, and including sample-and-hold, rack adapter, and power supply, the Astroverter costs approximately \$2000. Expanded to 128 channels, it is \$4000. As a 14-channel digital-to-analog converter package, less than \$4200.



A new data acquisition instrument, the Astroverter by Astrodata, Inc., can be coupled into the 2016 series data acquisition and control system.

## Memory Unit To Be At SJCC

WALLED LAKE, Mich.—Bryant Computer Product's compact, low-cost memory system on display at the Spring Joint Computer Conference (CLC-1) is a 1.2 million bit capacity, ten-inch, magnetic memory drum system with serial write/read/select electronics. The CLC-1 fits easily into a standard 19-inch relay rack and this size plus its capacity and high transfer rate of 2.2 million bits-per-second makes the CLC-1 suitable for such systems applications as: general purpose business machines, small accounting machines, small and medium size computer systems, process control systems.

The Compact Positioning Head Drum System, or CPhD, features a storage capacity of 900,000 8-bit characters accessible in an average time of 60 milliseconds. An important aspect in the design of the CPhD is the head pad arrangement, where eight write/read heads are mounted on one head pad.

## SALES AGENTS

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That's up to seven times  
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Eighty lines per second... 412,000 characters per minute... 4800 lines per minute. No matter how you figure print-out speed, dollar for dollar Clevite 4800 is far and away the fastest and most economical. It's four to seven times faster than most line printers... ten to twenty times faster than usual photographic hardcopy techniques. No other print-out system is even in the same ball park.

### Words. And pictures.

Clevite 4800 handles both alphanumerics and graphics. Simultaneously. It will reproduce words, numbers, drawings, charts and graphs. Paper is an easy-to-file 8 1/2" wide and page height is infinitely variable up to the full 300' length of the paper supply roll!

### More of the fonts you want.

Clevite 4800 generates a wide variety of fonts from the smallest

matrix on up. In an equally wide variety of weights, sizes and styles.

### Archival quality.

Clevite 4800 uses a special, high-contrast paper. The electrostatic print-out won't smear. And the paper won't curl, yellow or get brittle in storage. You can write on it with ball point pen, pencil, felt-tip or whatever.

### The sound of silence.

Clevite 4800 is an electrostatic printer. So it is quiet. (Think about that next time you're trying to make yourself heard above a chorus of impact-line printers.) And no impact means less wear and tear on the printer, less maintenance and downtime.

### Beyond the computer.

Clevite 4800 has uses beyond the computer. In communications it can replace banks of teletypes and prints out data transmitted by telemetry, radio microwave and/or land lines. And it prints out graphic displays from CRT's using a TV raster display memory. The Clevite 4800 whips out full pages of alphanumerics and graphics as fast as signal sources can feed it. You may have other application ideas. Let's kick them around.

### A word from the sponsor.

Clevite 4800 is based on proprietary equipment and proprietary paper. There is nothing else quite like it. It's faster, more versatile, quieter and more dependable. Yet, the Clevite 4800 printer's low price will surprise you. Let's talk soon. Clevite Corporation, Graphics Group, 37th and Perkins, Cleveland, Ohio 44114.

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The next generation  
of high-speed printers.

See Clevite 4800 at booth 805. Spring Joint Computer Conference in Boston.



## New Health Record Group May Be Formed in Summer

ANN ARBOR, Mich.—Formation of a new health record association, including medical records, will be discussed in a meeting here June 23-24.

The new association would seek to fill the needs for a multidisciplinary forum for all persons concerned with medical data systems and to increase the number of personnel in the medical and health record field.

The spreading implications of

computerization, telecommunications, comprehensive planning, integrated health care, regional medical programs, health data banks, and other modern developments demonstrate the need for such a broad-based forum.

Many persons are making major contributions to the field and, through their efforts in research and development, are shaping the future of health record practice.

Among these are medical record

librarians, physicians, biostatisticians, systems analysts, and computer experts concerned with the recording, storage, and retrieval of health data.

It is anticipated that the association would supplement rather than duplicate the functions and goals of existing groups.

More details may be had by writing the Ad Hoc Committee, Post Office Box 432, Ann Arbor, Mich. 48108.

## New Literature

Specifications and applications of a line of ruggedly-constructed, airborne or portable magnetic-tape recorders designed for data acquisition under high-environment conditions are described in a new brochure entitled *High Environment Airborne or Portable Magnetic Tape Recorders*.

Data Division, Genisco Technology Corp., 81435 Susana Rd., Compton, Calif. 90221.

A new 12-page color brochure describes the APD-5000 microfilm plotter. General Precision Systems, Inc., 1077 E. Arques Ave., Sunnyvale, Calif. 94086.

The recording of instrument data for computer analysis is described in a new, 24-page application note.

Techniques for recording measurements from digital voltmeters, counters, and nuclear scalars on computer-compatible input media are described as well as techniques for easy entry of data through local time-sharing terminals that employ the Basic language.

Request Application Note AN-113 from Hewlett-Packard, Public Relations Dept., 1501 Page Mill Rd., Palo Alto, Calif.

Three bibliographies covering the published literature on data compression are combined in a publication entitled *A Compendium of Data Compression Bibliography*. The bulk of the literature is comprised of 177 titles published on the subject since 1950.

Copies may be obtained from SDS Publication 988019, Lee Hosford, A3-07, Scientific Data Systems, 701 S. Aviation Blvd., El Segundo, Calif. 90245.

Adapso has released the results of its second Operating Ratios Survey, conducted in late 1968.

The study denotes the size of operation, type of operation, and type of equipment used in relationship to sources of revenue, total revenue, and operating expenses in an effort to determine measurements for profit and loss.

Copies, at \$10 each, may be secured from Adapso, 420 Lexington Ave., New York 10017.

## Cybox To Hold Three Seminars

GREAT NECK, N.Y.—Cybox Associates, Inc. will hold two-day seminars in three cities for computer scientists, programmers, and technical computer facility managers concerned with the development of software systems for the highly interactive use of computer displays.

The seminars will be held May 12 and 13 at the Hotel Somerset, Boston; June 20 and 21 at the Holiday Inn Central, Minneapolis; and June 30 and July 1 at the Continental Houston Hotel, Houston, Texas.

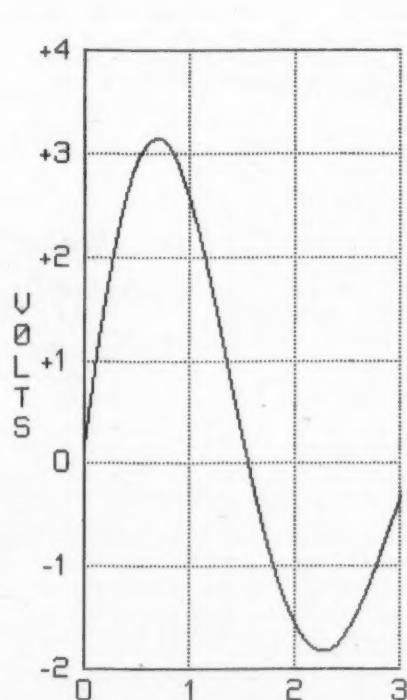
The seminar is centered around a case study of a program operating on a large time-shared computer system and using an interactive display.

Lecturers will provide a detailed presentation of the techniques used to create interactive computer graphics programs.

Advanced hardware concepts as well as mathematical manipulations on two- and three-dimensional objects will also be discussed.

Cybox Associates, Inc. is a new company in the field of information sciences.

For further information contact Cybox Associates, Inc., 50 Shelley Lane, Great Neck, N.Y. 11023.



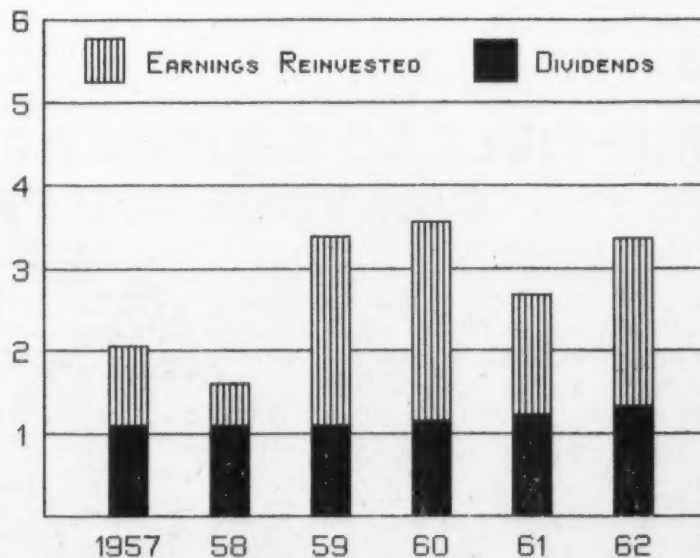
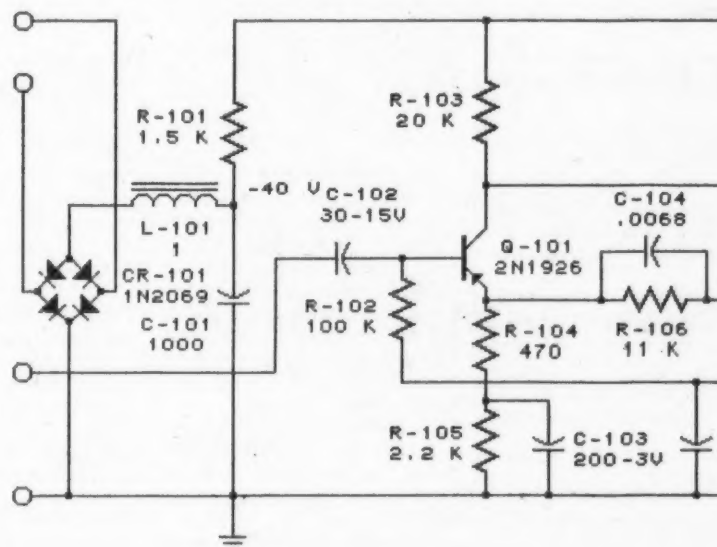
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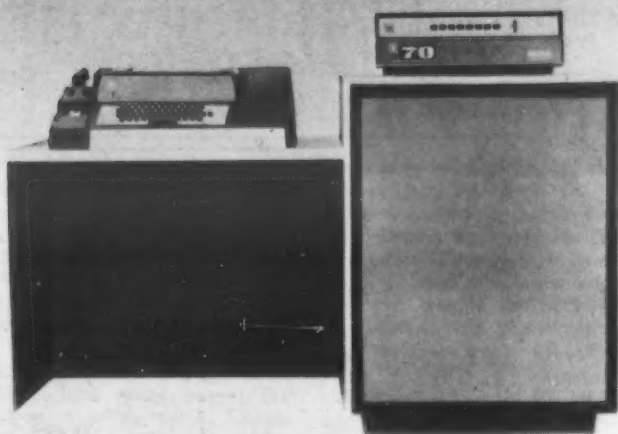
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THESE CHARACTERS ARE NOMINALLY 10 UNITS HIGH BY 7 UNITS WIDE. SOME CHARACTERS ARE 1 UNIT WIDE AND OTHERS ARE 9 UNITS WIDE.

THESE CHARACTERS ARE NOMINALLY 10 UNITS HIGH BY 6 UNITS WIDE. THE HEIGHTS VARY FROM 6 TO 14 UNITS. THE WIDTHS VARY FROM 1 TO 9 UNITS.

THESE CHARACTERS ARE NOMINALLY 6 UNITS HIGH BY 5 UNITS WIDE. THE WIDTHS VARY FROM 1 TO 7 UNITS.



The RC 70 by Redcor is an 860 nanosecond, 16-bit computer, featuring an 8K memory (plug-in expandable to 32K).

## Redcor Establishes Midi-Computer Class

CANOGA PARK, Calif.—With the introduction of the RC 70, Redcor Corp. establishes a new classification—the Midi-Computer (Midi-Computer: Sub-microsecond, 16-bit computer, compactly packaged with megacycle throughput word rate for OEM and systems requirements). The RC 70 will be on display for the first time at the Spring Joint Computer Conference, according to Dallas L. Talley, director of marketing for the company.

"Redcor's decision to enter the computer field," said Talley, "is based on Redcor's recognition that a gap exists between the high performance 32-bit CPU's and the capabilities of the mini-computers. The Midi-RC 70 bridges that gap."

The Midi-RC 70 is an 860-nanosecond, 16-bit computer fea-

turing an 8K memory (plug-in expandable to 32K), memory parity, memory protect, bi-directional index register, high-speed multiply and divide, direct memory access, priority interrupt and ASR 33.

The RC 70 has a two-week delivery and includes a full complement of operational software, with single pass assembler, Fortran IV (ASA Standard), math subroutines, utility package, and diagnostics.

### Ty-Core System Debuts At SJCC

BOSTON—The first public demonstration of Ty-Core data entry systems, the first keyboard-to-tape systems designed for simplified operation, will be on view at the Spring Joint Computer Conference May 14-16 here.

## Computer Solves Mystery Of 'Instant Insanity' Game

BOSTON—Instant computerization may prevent "Instant Insanity" at the Spring Joint Computer Conference in the War Memorial Auditorium here, May 14-16.

More than 20,000 conferees expected to attend the three-day meeting will see a unique demonstration in which a computer will solve the mystery of "Instant Insanity"—the Parker Brothers puzzle game that frustrated more than 7 million Americans who bought it last year.

The nation's best-selling toy or game in 1968, "Instant Insanity" consists of four multi-colored plastic cubes, each approximately 1-1/4 in. high. The object of the game is to line up the cubes so that four different colors—red, white, green, and blue—appear on each side of the row.

### Solve If You Can

Visitors to the Lockheed Electronics Co. display booth will be invited to solve a king-sized version of the "Instant Insanity" puzzle in the form of 10-inch inflated plastic cubes. If they fail, and the odds are 41,000 to one that they will, a Lockheed MAC 16 computer installed in the booth will provide the solution.

To obtain a solution, the player enters the colors of each side of the "Instant Insanity" cubes. MAC 16 then solves the mathematical matrix and prints the moves required to position the cubes correctly in microseconds.

The official world record for correctly arranging the "Instant Insanity" cubes is held by Al Feldstein, editor of *Mad Magazine*, who accomplished the feat in 90 seconds.

On the other hand, many individuals, including engineers and scientists, have taken weeks and

months to solve the puzzle, and countless others have never been able to solve it.

## Boston Blooms Burst For Busy SJCC Ladies

Wives accompanying those attending the Spring Joint Computer Conference May 14-16 in Boston have a full schedule to keep them busy.

The ladies program, which was set up by wives of local attendees, will allow the women to see what Boston is all about.

Tulips will be in full bloom in the Boston Public Gardens and the Boston Common will be bursting with green. The new Government Center, museums, specialty shops, and department stores, should interest all.

Registration to take part in the events scheduled will be Tuesday, May 13, in the main lobby of the War Memorial Auditorium, Prudential Center on Boylston St.

Further registration will be held the following mornings in the Hampton Room of the Sheraton-Boston Hotel, which is the meeting place for individuals interested in the schedule.

The schedule is as follows:

WEDNESDAY, May 14, 9-10 a.m.—Official welcoming and coffee hour; 10:15-11:30 a.m.—Tour of Isabella Stuart Gardner Museum on the Fenway.; 12:15 p.m.—Luncheon and informal fashion show at Boston 1800 restaurant.

WEDNESDAY evening—Night at the Boston Pops.

THURSDAY, 9-10 a.m.—Coffee in Hampton Room; 10:30

a.m.—Shopping spree; 12:30-3 p.m.—Luncheon at Pier 4 restaurant; 3 p.m.—Boston Museum of Fine Arts.

FRIDAY, 9-10 a.m.—Coffee hour in Hampton Room; 10 a.m.—Luncheon at restaurant of your choice; 8:30 p.m.—Loeb Drama Center, Harvard University.

There will be two performances each day of the Multi-Media Theatre at M.I.T.

Mrs. Jack Porter and Mrs. Charles W. Adams are in charge of the program.

## Data Plotter Will Be Shown By EAI

BOSTON—The EAI Graphics and Instruments Division will introduce its new 430 Dataplotter line at the Spring Joint Computer Conference this year, according to a company spokesman.

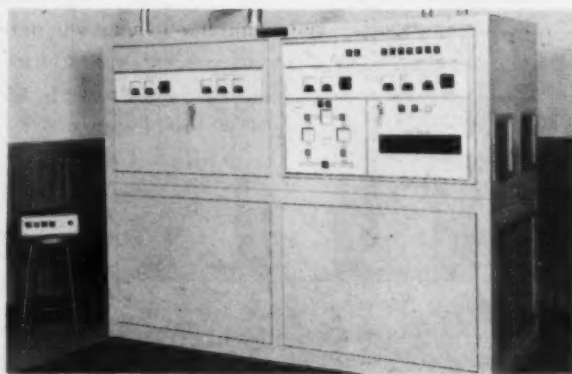
The new plotter can produce, according to the company, computer graphics in line, free run, point, scribe, and printer modes. It can be operated either on-line or off-line with most computers. Magnetic tape is used as the driving device when run off-line.

There are two plotting-table sizes available with the new plotter: 31" by 36"; and 54" by 76".

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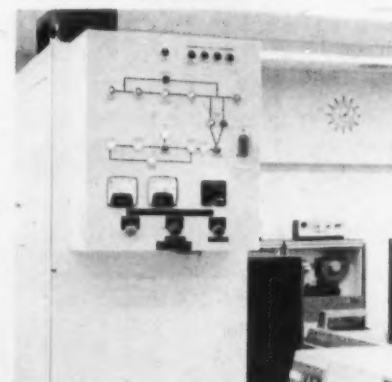
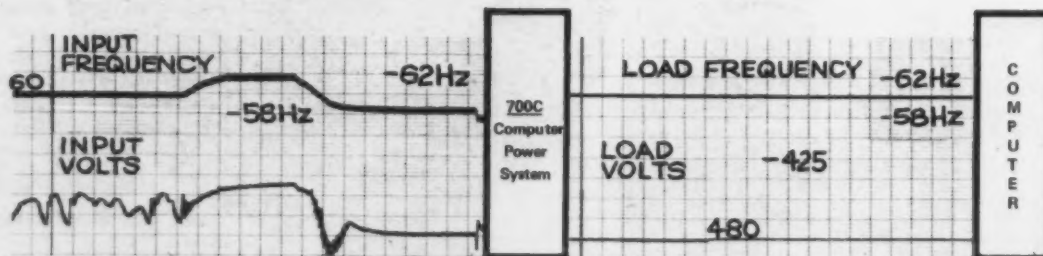
Front view of standard 700C System Cabinet for sizes through 60KW. Batteries are separately mounted.

**PROCESSING ERRORS**—caused by millisecond power line disturbances. Experience shows that anywhere from 25 to several hundred power line interruptions lasting up to 20 cycles may be expected annually.

**DOWN TIME**—caused by total power failure. Experience indicates that 2 or 3 total power line failures may be expected annually.

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- Trade in allowances for outdated flywheel systems.



Remote indicating Console for mounting in computer operating area.



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## DEC Introduces Computer Unit

MAYNARD, Mass.—A new computer system, an 18-bit medium scale machine incorporating a high degree of simplicity and reliability, will be introduced at the Spring Joint Computer Conference May 14-16.

A product of Digital Equipment Corp., the system is one of the first simultaneous hardware and software introductions.

A variety of program packages have been designed for the machine and will be available with first deliveries.

### Expandable Configurations

The computer itself will come in several expandable configurations and will be competitive with a variety of other computers, from small 16-bit machines to large computing systems.

In all cases, according to the company, the new computer is expected to have a price/performance advantage.

### New Features

Among the features of the new machine are a separate input/output processor that works parallel to but independent of the central processor, the extensive use of integrated circuitry, and a memory cycle time in the 800-nanosecond range. Core memory will be expandable from 4K to 128K.

In addition to this new system, DEC will display its PDP-14 general purpose machine controller, introduced in March, and the PDP-12 laboratory computer system announced last January.

A number of time sharing terminals on line to a large PDP-10 and a Time-Share-8 system will be available for program generation, using such languages as Focal, Fortran, and Macro.

Priced at \$4,900, the PDP-14 is a flexible, solid state alternative to electrical relays used for the control of mass production machinery as found in such industries as steel, automotive, and textile, the company stated.

### New PDP-12

DEC's newest entry into the laboratory market, the PDP-12, will be demonstrated at SJCC. The system includes a 12-bit central processor with memory expandable from 4K to 32K, two magnetic tape units, a cathode ray tube display, a 16-channel A/D converter and multiplexer, a data terminal, a teletypewriter, and a paper tape reader/punch.

### Simple Operation

Priced from \$14,900 to \$27,900, the PDP-12 is designed for simplicity of operation and programming for laboratory use in bio-medicine, oceanography, chemistry, physics, education, and a variety of industrial environments, according to the company.

### Time Sharing

DEC's traditional time sharing capability will be demonstrated with a number of terminals at the exhibit on-line to a PDP-10 system and a low-cost Time-Share-8 system located in the Maynard complex.

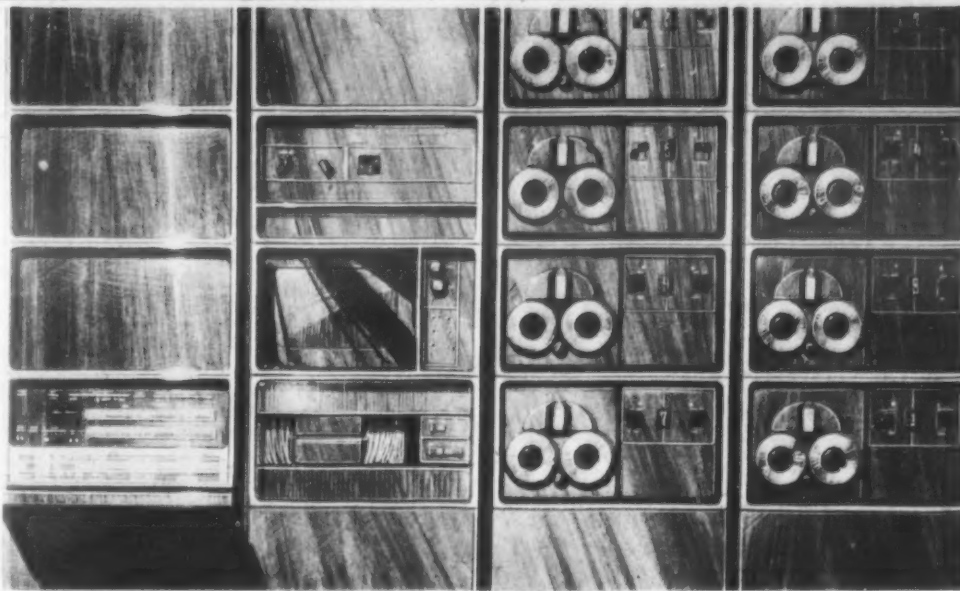
There are now some 55 of the

36-bit PDP-10 computers installed world-wide in such environments as commercial time sharing, banking, manufacturing, and the sciences.

The TS-8, introduced last year, provides multilanguage time sharing capability for as many as 32 users simultaneously.

### Decus Symposium

The Decus symposium will be held at the Colonial Statler Inn, in Wakefield, Mass., a Boston suburb. Anyone interested in attending should contact: Miss Angela Cossette, Decus, Maynard, Mass., phone: (617) 897-5111.



Artist's drawing presents idea of how a full computer system built around DEC's new medium scale machine might appear.

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## DCT 132 Unit Features Fast Functions Change

DALLAS, Texas—A new order of magnitude in remote processing capabilities, the new DCT 132 simulates the communications functions of most remote terminals.

In the majority of cases, the unit may directly replace a remote terminal without requiring modifications to the central computer's operating system. Internally programmable, its functions may be changed in as much time as it takes to load a new program. The unit is being featured at the Spring Joint Computer Conference this year.

Interfaced with a dial up switched network or a dedicated line, data may be transmitted and received at rates from 2000 to 4800 bits per second.

The basic system, which is priced at \$21,000, consists of a remote terminal controller with a 200 cpm card reader, a 300 lpm line printer, and a coupler for a modem. Devices which may be included in an expanded system are a 100 cpm card punch, a Teletype ASR-33, a magnetic tape unit, and paper tape reader/punch.

With this equipment, the DCT-132 may input and transmit data via a communications line to a central computer system, receive and output data from the communications line to the peripherals, and perform off-line functions between the devices.

### Protected Memory

The DCT-132 utilizes a small character oriented processor, featuring parallel data transfers, a repertoire of 21 instructions including indirect addressing, 2K expandable to 4K words of 8 bit high speed memory, and a highly adaptable 32 device input/output channel. A memory protect feature which prevents modification of the operating program due to an I/O device malfunction, and/or programmer or operator error inhibits writing into the first 1024 words of memory. This area is reserved for service and utility programs and may be read only while the remainder of memory is left in the read or write mode.

The system is provided with an operator control console con-

taining a series of indicator lights and switches. Programs may be loaded into memory under control of the console, and selection of devices for the off-line mode of operation may be made. Upon indication of a line error by the program, a negative acknowledge and no answer light will signal the operator to initiate corrective action as required. The functions of the control console pushbuttons are determined solely by the program linkages established in response to a control word input through the I/O channel.

The communications coupler interfaces the DCT-132 via the synchronous line modem per RS-232 specifications. Under control

of the internally stored program, the communications coupler performs the serial/parallel data conversion, character synchronization, and acknowledges message timing.

The DCT-132 comes standard with a program designed to handle the reception and transmission of messages coded in ASCII in the on-line mode of operation. Programs are available for simulating the functions of a number of currently used remote batch processing terminals. Most transmission codes and procedures may be simulated by the system. An assembler is provided to enable the user to facilitate the implementation of his own operating system.



Data may be transmitted on the DCT-132 and received at rates from 2000 to 4800 bits per second.

## The Lonely One



Unlike the traditional keypunch it's designed to replace, the DATASCRIBE™ data recorder works alone—without a separate verifier. Also without cards and homey dust and lint and clatter. All this, of course, because the DATASCRIBE is an electronic device that's used to enter data directly onto magnetic tape.

Its functional advantages over a keypunch are happily big enough to infuse some of the DATASCRIBE's loneliness with pride. Data entry is 30% faster. Three DATASCRIBES will therefore easily do the work of four keypunches. And computer throughput time—because of the absence of card-to-tape conversion—is upped by a phenomenal 250% or better. Also, since

it contains the most advanced IC electronic design, the DATASCRIBE is almost infinitely more reliable. Not that the DATASCRIBE doesn't respect its heritage. It takes up the same amount of room as a keypunch. It faithfully retains the standard keyboard and data format, and so automatically qualifies any living keypunch operator. Most important, it presents the operator with an English-language display of column numbers and data.

What computers does the DATASCRIBE work with? Just about all of them. In either 7- or 9-track versions. But it was designed specifically for compatibility with IBM third-generation 360 systems. That kind of companionship should take the edge off its loneliness.

## ISA Offers Hospitality

International Systems Associates, a full service data processing organization, will maintain a hospitality suite at the Sheraton Boston Hotel, May 14-16, in conjunction with the 1969 Spring Joint Computer Conference of the American Federation of Information Processing Societies.

Nat Rothenberg, chairman of the board, and Paul A. Goldner, president, will man the suite with the aid of a team of ISA executives. In addition to material on the company's various services in the data processing field, the exhibit will feature a presentation on ISA's 110-operator key punch installation at Barbados in the West Indies.

In keeping with the Caribbean motif of the suite, ISA will serve Barbados rum to all visitors.



Meet the Lonely One at Booth 704, Spring Joint Computer Conference.

To learn how the DATASCRIBE might serve your own applications, write for our brochure.

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DATA SYSTEMS

1642 Kaiser Street / P.O. Box 1820  
Irvine, California 92664 / (714) 540-7640

## calendar

May 26-28, St. Paul, Minn. — Control Data Corp. Conference on Forum of Control Data Users (Focus I). Contact: Dr. D.T. Berg, Electric Machinery Manufacturing Co., Minneapolis, Minn.

June 2-6, New York — Contemporary Systems Corp. Seminar on systems design and management information systems. Contact: Contemporary Systems Corp., 7942 Wisconsin Ave., Bethesda, Md.

June 8-12, Miami Beach — Sixth Annual Design Automation Workshop. Contact: Chairman N. Garaffa, Jr., RCA ISD, Building 13-2-8, Camden, J.J. 08101.

June 9, Ottawa, Canada — Spring Conference of the Information Processing Society of Canada. Contact: Andy Sokol, Program Chairman, IBM Ltd., 150 Laurier Ave. West, Ottawa, Ontario.

June 16-20, Washington, D.C. — Contemporary Systems Corp. Seminar on systems design and management information systems. Contact: Contemporary Systems Corp., 7942 Wisconsin Ave., Bethesda, Md.

June 16-18, Washington — Annual Computer Conference sponsored by the Computer Group of IEEE, Inc. Contact: John L. Kirkley, IEEE Computer Group, 16400 Ventura Blvd. No. 321, Encino, Calif. 91316.

## Record \$100 Million In Computer Equipment Shown

BOSTON — More than \$100 million in new computer equipment which will help the United States accelerate its present technological revolution by providing clues and answers to unsolved problems will be open for public inspection in Boston May 14-16.

This hardware, as well as the software to harness the computers, will be assembled at the War Memorial Auditorium during the 1969 Spring Joint Computer Conference.

### 170 Exhibitors

Displaying their latest advances will be 170 exhibitors, a new record for the semi-annual conference. Previous high was 154.

The new equipment will occupy

more than 100,000 square feet of space on the auditorium's two exhibit floors.

Exhibit hours for conference attendees will be: Wednesday, May 14: 10 a.m.-6 p.m.; Thursday, May 15: 10 a.m.-9 p.m.; and Friday, May 16: 10 a.m.-5 p.m. The exhibit area will be closed to the general public on Thursday from 10 a.m.-5 p.m., but open all other times.

Entry to the exhibit area is included in the conference registration fee. Admission for nonregistrants for the three-day period is \$5.

### AFIPS Expects 20,000

The conference is expected to draw more than 20,000 partici-

pants including 5000 of the nation's computer professionals who will take part in 34 general sessions.

Other attractions will include an experimental multimedia computer theatre, a science film feature, tours to computer installation sites, and a one-day (May 16) session on "Human Uses of Computers for Education."

Conference sponsor is the American Federation of Information Processing Societies (AFIPS), a nonprofit society of more than 80,000 computer specialists in the United States who represent 10 computer-related organizations.

## a classroom of computer knowledge

in a class by itself.

Subject: the teaching of computer concepts.

Method: a complete lesson, made up of an animated sound motion picture and a supporting workbook, which turns a desktop into a classroom for individual instruction.

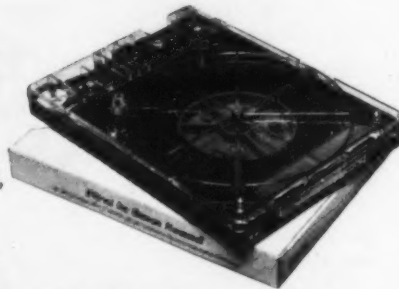
Results: remarkable.

That, briefly, is the Edutronics' system of educational aids for anyone involved with computers. This system is an efficient, economical way for organizations to train and update their staffs in the ever-advancing field of data processing. And continual updating — and upgrading — of the individual is vital for firms that wish to hire and retain top people.

Some of the many companies which subscribe to that practice — and to Edutronics' system — are Transamerica Corp., Equitable Life, Continental-National American Group, Mattel, Inc. Universities, too, find the Edutronics' system a valuable, time-saving method of instruction.

There will be 58 Edutronics' lessons available by the end of 1969.

Those currently in use are listed at right. Any or all of our lessons together with projector and audio equipment are yours, through a convenient subscription plan.



### CURRENT EDUTRONICS' LESSONS

#### Data Processing Principles

Basic File Concepts

Basic File Maintenance

Sequential and Direct Files

#### Sequential Files

File Maintenance

Changes and Deletions

Insertion Input/Output Logic

File Maintenance Logic

End-of-File Logic

#### Direct Access Files

File Characteristics

Sequential Organization

Direct Organization

Chaining and Bucket Indexing

Indexed Sequential Organization

Indexed Sequential Processing

**edutronics** Inc.

2790 Harbor Blvd./Costa Mesa/Calif. 92626 / (714) 54



## Rixon Offers 9600 Bit/Sec Data Set

SILVER SPRING, Md.—As the first offering of a family of entirely new data communications equipment, Rixon Electronics, Inc. will introduce a 9600 bit per second data set at the Spring Joint Computer Conference May 14-16 in Boston.

### Not Pattern Sensitive

The data set will be utilized on land lines, submarine cable, and microwave facilities. All levels and impedances conform to EIA Standard RS-232B; provision has been made for conversion to meet MIL-STD-188B. The Rixon 9600 bit per second data set is not pattern sensitive with regard to input data. This is accomplished through the use of an internal code translator which results in a near flat spectral component distribution.

The basic line signal will be a four level AM, suppressed carrier, vestigial sideband signal, with lower sideband being transmitted. This full duplex data set will utilize a coding scheme providing immunity from the ambiguity of the phase of the recovered carrier in the receiver data decoding operation.

### No Operator Intervention

This new data set will operate with either a manually adjusted equalizer or an automatic equalizer. The manually adjusted equalizer will have a minimum number of controls and a meter read out. The automatic equalization will automatically compensate for the differential delay distortion inherent in the telephone transmission facility; it additionally will compensate for the amplitude deviations sometimes encountered in the telephone system. Moreover, should the telephone line fail and the telephone system switches to a backup facility, no operator intervention is necessary.

### Low Error Rate

The error rate performance over any 4C-grade line is better than 1 in 105 as long as the signal to noise ratio is 23dB or better. This is completely compatible with the currently available 4C-grade lines.

The Rixon 9600 bps data set with the automatic equalizer will sell for about \$10,000.00 each.



## Coded Character in Unit Is Man, Machine Readable

PLAINVIEW, N.Y.—A new type of unit record equipment is to be exhibited at the Spring Joint Computer Conference in Boston, May 14-16, by Potter Instrument Company, Inc., it was announced here.

### Magnetic Bar Coding

Heart of the new system is a magnetic bar code with an associated alphanumeric character printed on cards of key punch size. This coded character will be both man and machine readable, offering bit density improvements of almost 9 to 1 over conventional cards and performing—at far lower costs—many of the functions now accomplished by

optical character recognition and MICR techniques, the company said.

Potter, which recently entered the data entry field with the introduction of their KDR series of keyboard-to-magnetic-tape systems, will demonstrate automatic and manual card preparation and card reading.

### Automatic Preparation

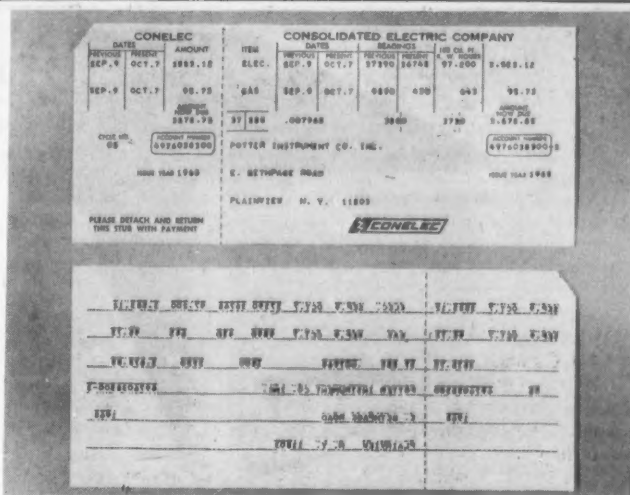
Automatic card preparation will be accomplished by a printer, Model HSP-3502A, operating as an off-line print station. The unit is a standard high-speed printer specially adapted to print the magnetic characters required in the new system. Manual card prepara-

tion will be accomplished by using a modified standard typewriter.

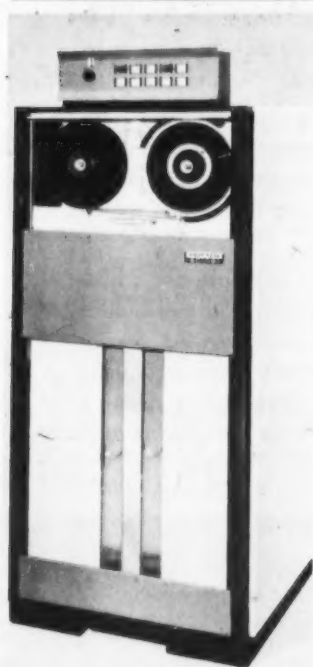
A magnetic mark card reader will be used to read the six-line cards produced by both the printer and the typewriter. The unit will read at 300 cards per minute.

The hole-free, readable cards provide effective and convenient turnaround documents which are especially usable for utility billing and similar applications.

The three representative pieces of equipment being shown at SJCC were developed, according to a Potter spokesman, to demonstrate the advantages of the new concept and to suggest possible implementation and applications of the principle.



Facsimile of a utility bill shows Potter's magnetic unit record card system "at work." Front of card (top) is man-readable, utilizing alphanumeric characters. Back of card (bottom) is machine-readable showing alphanumeric characters in mirror image with coded magnetic marks above and below each character.



High-speed tape transport which provides fully automatic threading and loading.

### SC 1091 Has Automatic Load

PLAINVIEW, N.Y.—The SC 1091, a new single-capstan tape transport on display at the Spring Joint Computer Conference, features fully automatic tape threading and loading with high speed operation and high density recording [CW April 30].

The unit is fully compatible with the IBM 2420 and the associated tape cartridge. With a cartridge-enclosed reel, the tape loading process is totally automatic. Using a conventional reel, the operator merely positions the free end of the tape on a threader chute.

With or without a cartridge, the SC 1091 automatically threads the tape from the supply reel to the take-up reel, loads it into the vacuum columns, and positions it at the load point within 7 seconds.

Capable of bi-directional tape speeds to 200 ips with no program restrictions, the SC 1091 provides industry compatible read/write operations at 1600 bpi.



Our page-printing  
data transceiver  
is high-speed,  
quiet,  
reliable,  
self-contained  
and decidedly  
portable.

**High-Speed** — The operator selects among three speeds: 10, 15 or 30 characters per second. Fast transmission reduces total operational costs.

**Quiet** — No clatter, no chatter; in fact, EXECUPORT 300 has nothing to say. In the stand-by position, all you hear is the hum of the cooling fan. In the operational mode, the loudest sound it emits is an unobtrusive tapping.

**Reliable** — Solid-state circuitry reduces problems commonly associated with electro-mechanical and photo-electric devices. For example: A typical electro-mechanical teleprinter has some 5,000 moving parts; EXECUPORT 300's print mechanism has less than a dozen.

**Self-Contained, Portable** — Keyboard, thermal

page printer, solid-state control logic, telephone coupler, data access jack and interface, plus a universal interface for peripheral accessories — all components are enclosed in an attractive, integral carrying case. Total weight is about 26 pounds (give or take a printed circuit\*).

To see and hear for yourself, visit Booth 610 at the 1969 Spring Joint Computer Conference in Boston, May 14-15-16.

Remember the name: EXECUPORT 300. It's the only high-speed, quiet, reliable, self-contained and decidedly portable page-printing transceiver in the world today.

\*Electronic answer-back optional.



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Designed for use with small digital computers, the Compu/Corder by Sykes Datatronics, Inc., is a cassette loaded magnetic tape transport.

### Tape Transport Made For Minis

ROCHESTER, N.Y.—A cassette loaded, magnetic tape transport, specifically designed for use with small digital computers will be displayed at the 1969 Spring Joint Computer Conference May 14-16 at the War Memorial Auditorium, Boston.

The peripheral system, called a Compu/Corder, is provided with comprehensive software packages and complete electrical interfaces for the small Digital Equipment Corp., Data General, and Varian computers, and is being presented by Sykes Datatronics, Inc.

All software packages and electrical interfaces are provided to users without charge.

The features of the Compu/Corder are:

- All tape transport commands are performed under program control.
- A 3/8" x 2 1/2" x 4" reel-to-reel cassette, containing up to 300 feet of 1/7" wide, 3/4 mil computer grade certified, magnetic tape.
- Read/write transfer rates of 5,000 bits per second.
- Packing density of 1,000 bits per in. on each of four program selectable data tracks.
- Bi-directional, high-speed (110 inches per second) file access capability.
- Rewind speed of 110 inches per second.
- Average access time to any file on 1001 tape is five seconds.

The Compu/Corder is priced at less than \$2,500 in quantities of one, with quantity discounts and OEM price schedules also available. Shipments of the Compu/Corder Peripheral Systems are scheduled to begin early this summer.

Compu/Corder systems will be displayed at the 1969 Spring Joint Computer Conference, May 14-16, War Memorial Auditorium, Boston.

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## Western Semiconductors Acquires Interest In CDP

LOS ANGELES — In a move designed to participate in President Nixon's program of "Black Capitalism," Western Semiconductors, Inc. has agreed to acquire a majority interest in the College of Data Processing, a vocational school in Los Angeles specializing in the training and job placement of minority group members.

Announcement of the proposed acquisition was made jointly by Ivan Neufeld, president of Western Semiconductors, Inc., and Novel Stokes, chief executive officer of Telco Computer Systems, Inc., which operates the school.

The College of Data Processing is believed to be the oldest state and federally approved electronic data processing training center in the United States devoting its attention to the training of minority students.

"We agreed to Mr. Neufeld's proposal," Stokes said, "because it provides us with the necessary infusion of funds, management, and technical assistance to expand our program, and yet at the same time, maintain present management."

#### First Step In Expansion

Neufeld said Western Semiconductors "acquired an interest in the school as the first step in our

program of expansion into the computer, electronics, and scientific field because it provides an excellent base for developing talent, including management skills, and at the same time, broadening the operations of a firm that is primarily a minority-owned profit center."

#### Terms Not Revealed

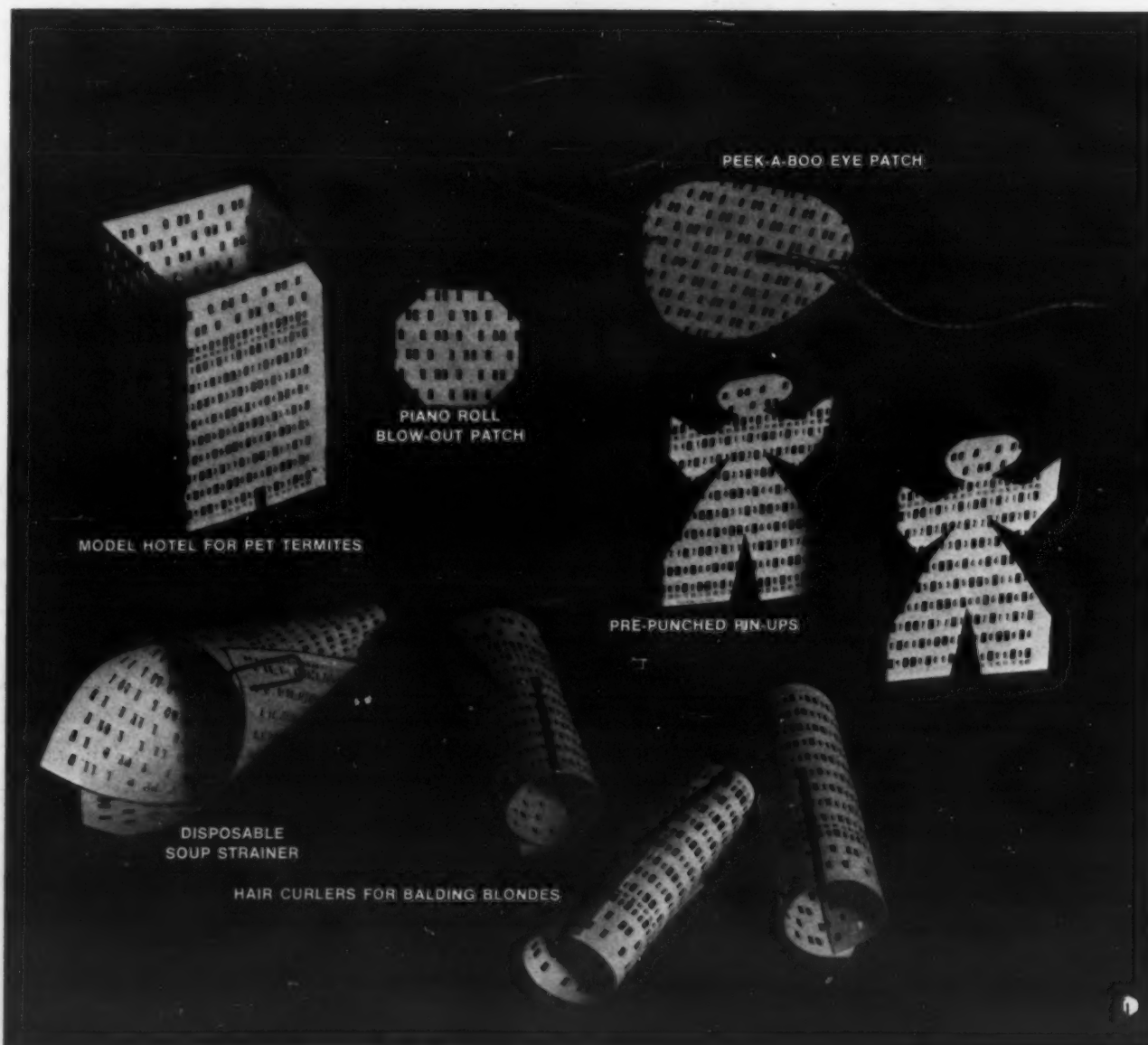
Although terms of the agreement were not revealed, Neufeld and Stokes indicated that the purchase price was based on earnings, a projection for growth in the next three years, and on a special stock incentive program for the management of the college.

## MOHAWK DATA-RECORDERS are creating new uses for punched cards

When you use Mohawk Data-Recorders to upgrade your computer input preparation, you'll no longer need to punch little holes in millions of cards.

But don't throw away your left-over cards. Give them to art instructors, kindergarten teachers, Boys' Clubs, Senior Citizen groups and similar organizations. They're always looking for materials to keep hands and minds creatively busy.

The trend to ultra-sophisticated computers . . . now stretching toward the fourth generation . . . further widens the gap between punched cards and the CPU. *If your present computer calls for magnetic tape input, and you're still starting with punched cards, you're pitting a horse and buggy against a jet-age electronic phenomenon.*







New high-speed chain printer by Potter Instrument Co., provides speeds of up to 1200 lines per minute and dual speed, servo-controlled paper feed for maximum throughput.

## HSP 3550 Potter Printer Offers 192 Characters

PLAINVIEW, N.Y.—A 1200-line-per-minute printer for data processing systems will be unveiled by Potter Instrument Company at the Spring Joint Computer Conference in Boston, May 14-16, it was announced here.

The new addition to the Potter family of chain printers, the HSP 3550, offers up to 192 different characters—numeric, alphanumeric, and symbolic—in sets of 48, 64, 96, or 192. Four-character slugs are individually replaceable.

The HSP 3550 features dual speed, servo-controlled paper feed for maximum throughput and provides IBM compatible vertical format (12-channel).

To assure fast, efficient service-

ing, the HSP 3550 is modular in design with all electronics on plug-in printed circuit boards.

A minimal number of adjustments is required with the new Potter printer. Logic is "fourth generation" (MOS-LSI). Power requirements are 208/230 volts, single phase, 50 or 60 Hz.

The 3550 is supplied in its own soundproofed cabinet, supported by a welded steel frame. Convenient accessibility is provided to all operator controls and for loading and removal of forms.

Designed for use with all computer and data processing systems, the 3550 can also be interfaced off-line with a magnetic transport for use as an off-line print sta-

tion, or interfaced with a data-telephone for remote terminal system applications.

## OIC Utilizes 1401 Computer For Training

PHILADELPHIA — Students in the programmers school of the Opportunities Industrialization Center (OIC) of Philadelphia are using a 1401 small scale computer belonging to the Accounting and Computer Center here.

When not engaged in normal office activity, the system serves as a practice machine for eight students who are learning data processing through the OIC school.

Harold E. Rising, manager of the center said, "The students use the machine on an as-needed basis. They develop data processing programs in class, then phone us to determine the availability of the 1401."

Rising learned about the class's need from James J. Houseman, a former technician at the center, who served on the OIC advisory board for programming instruction.

"When the need for a test machine developed, it was natural for Jim to turn to the office," said Rising. "We were quick to respond because we think the entire OIC effort is so valuable."

The eight OIC students and their two instructors had a special day-long orientation session at the center late in January.

Data-Recorders offer the most practical method of speeding up and cleaning up input preparation. With about 15,000 Data-Recorders now in use in the U. S., Canada, Great Britain and Europe, you can believe they're doing what they're intended to do.

The Mohawk Data-Recorder was the original keyboard-to-magnetic tape unit. It eliminates punched card input preparation . . . permits transcribing of raw data, from source documents, direct to computer-compatible magnetic tape . . . and verifying on the same machine.

### PUNCHED CARDS VS. DATA-RECORDER

In many large EDP installations, costs of punched card input preparation exceed computer processing costs!

Even the fastest operator is limited by the operational speed of the key punch. Key punch equipment is noisy, contributes to operator fatigue . . . and errors. Error correction with cards is a slow, costly process. Lost cards and mixed batches are common occurrences. Card storage frequently is expensive. There's a shortage of key punch operators. Scheduling becomes complicated . . . standby equipment for peak loads generally is necessary, and once a batch of cards is completed, the punched data still must be converted to computer-compatible language on magnetic tape.

DATA-RECORDER USERS claim substantial operator productivity increases. Your former key punch opera-

tors handle more work on Data-Recorders. MDS training enables them to swing quickly from key punches to Data Recorders.

Key-entered data is first stored in the Data-Recorder's memory. Sensing errors can be corrected immediately, in the memory, before they reach the tape. Any errors found in verification also are easily corrected. Thus, fewer errors reach your computer.

Keyboard operation is effortless . . . operators can maintain an even keying cadence. The Data-Recorder is pleasantly silent, compared to key punch equipment. Operators make fewer errors because they're not overpowered by error-inducing fatigue.

You can have single-operator responsibility. She can both record and verify, on the same machine. No need to involve several operators. Responsibility for accuracy is pinpointed.

Once a record is on tape you can't drop it, spill it or accidentally mix it with another batch. Tape can be reused many times, if desired . . . and, compared to cards, it requires minimum storage space.

Many users have found they're not bound to 80-column records with the Data-Recorder. There's almost no limit to the logical record size you can write. The operator can capture all the data from a document on one pass, under one program control, the way she reads a book page . . . left to right, top to bottom.

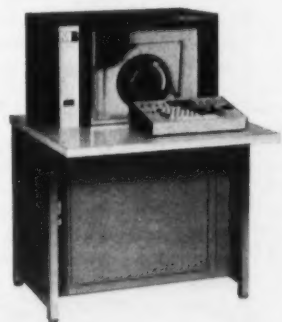
Data-Recorders come in combinations for long distance data communication, card reading, adding machine control, paper tape reading, input/output typewriter, and line printout.

Your man from MDS will be glad to work with you, show how you can improve your throughput with Data-Recorder input. Phone or write.

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**MOHAWK DATA-RECORDER MODELS:** 1101 . . . 1102 MTP (Multi-Tape Pooler) . . . 1103 LDC (Long Distance Communications) . . . 1104 AMC (Adding Machine Control) . . . 1105 PTR (Paper Tape Reader) . . . 1106 PCR (Punched Card Reader) . . . 1109 DPC (Data Preparation Card Reader) . . . 1112 DPA (Data Preparation Adding Machine) . . . 1115 DPT (Data Preparation Tape Reader) . . . 1118 DLP (Data List Printer) . . . 1122/902 (7/9 Channel Converter) . . . 1181 TWK (Input/Output Typewriter) . . . 1183 DPP (Data Preparation Printer). All 1100 Series Models record data on 7-channel magnetic tape at 200 BPI. The following 8400 Series Models (9-channel, 800 BPI) also are available: 8401 . . . 8402 . . . 8403 . . . 8404 . . . 8405 . . . 8406 . . . 8409 . . . 8412 . . . 8415.

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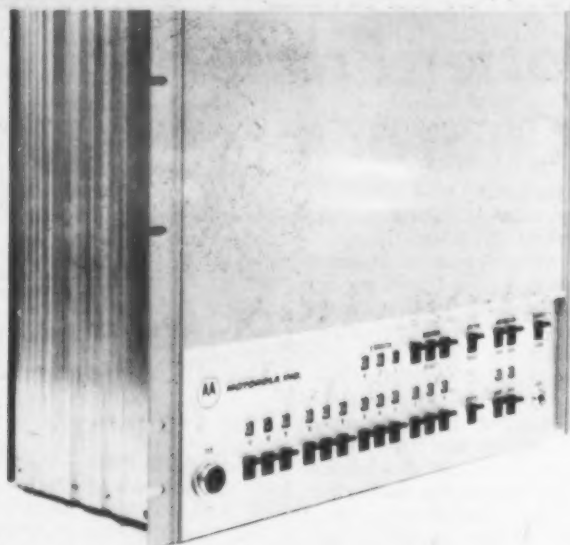
We are dedicated to the placement of professionals in the Data Processing field...by and for computer people.

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The Phase II MDP-1000 by Motorola Instrumentation and Control is designed for installation in relay racks or shallow depth cabinets for industrial applications.

## Slim Line Phase II MDP 1000 Designed For Industrial 'Hard Hat' Applications

PHOENIX, Ariz. — Broadening its capability in automatic control systems for industry, Motorola Instrumentation and Control Inc. has produced a Phase II configuration of its MDP-1000, a systems oriented digital data processor.

The MDP, only recently introduced at the 1968 FJCC, takes on an added degree of utility for systems designers with its new slim-line configuration. It will be shown for the first time at the upcoming Spring Joint Computer Conference in Boston.

### Vertical Configuration

Designed specifically for "hard hat" applications in industry, the new Phase II configuration masters the space problem of

users who need a rack-mountable package permitting expansion of memory while maintaining minimum package depth. In answer to this problem, the Phase II MDP design departs radically from conventional small computer horizontal packaging techniques. The new unit is in a vertical configuration, is sealed against possible contaminants, and provides for easier maintenance. A maximum depth of 13" (with 16K of core memory) makes for convenient mounting in shallow wall cabinets of the type often found in industrial installations where space is at a premium.

### Design Flexibility

The upright configuration

provides customer-oriented design flexibility. Memory capacity can be increased without increasing package height. With the conventional unit this often is impossible after installation because other equipment is in the way.

Enclosing the unit makes it less susceptible to contaminants and greatly reduces periodic maintenance requirements. This feature plus a new convection cooling arrangement improves operational stability and reliability characteristics.

The Phase II MDP-1000 is available with memory capacities from 4K to 16K in 4K increments. It will use the "shared command" technique to increase programming efficiency, in which fewer words are required to specify an instruction. The machine is an IC oriented unit which will perform in excess of 400 commands of various types. The random access, single address memory has a cycle time of 2.16 microseconds.

The unit can be supplied to operate from either 117 VAC, 60Hz, or 24 VDC power. No additional regulation is required. A power fail-restart feature is available as an option.

## Talked to an ex-Itek programmer lately?

### We don't believe it.

Ex-Itek programmers aren't non-existent, but they are rare. Itek has an enviably low turnover of programming personnel.

Some reasons for this low turnover are apparent even after a brief visit with us. The new construction now underway and the activity within our personnel department are obvious signs of continuing growth. The minimum use of executive titles and a healthy disregard for organization charts imply, correctly, that here is a company of professionals who respect each other's ability.

Perhaps the basic reason for the scarcity of ex-Itek programmers is the kind of work being done here — challenging, absorbing work which recognizes and demands the fullest contribution by each individual. For example:

**Ken (M.S., E.E.)** is developing an algebraic symbol manipulation language

**Frank (Ph.D., C.E.)** is solving a 10,000 square matrix in structural analyses

**Jim K. (working on B.S.)** is writing machine-independent code in a meta-language. Mike is helping Jim.

**Dick F. (M.S., Physics)** is generating prize-winning plots on our CalComp Zip-mode plotter while studying image enhancement

**Norm (M.S., Meteor.)** is developing a multi-band spectral simulation system

**Ray R. (B.S., Aero.)** is working on scanner-computer integration

**Ron G. (M.B.A.)** is writing an information-retrieval system

**George N. (B.S., E.E.)** is describing a numerical control language — Stan (B.S., Ed.) and Tony (B.S., Physics) are helping George

**Randy D. (M.S., M.E.)** is simulating optical systems to compute production tolerances

**Ed C. (B.S., Math)** is writing a process-control real-time monitor system. Ted (B.S.) is helping Ed.

**Russ (working on B.S.)** is solving thermal and thermal-structural problems

\_\_\_\_\_ is working on interactive time-sharing for our 131K (words) CDC 3500 Computer System

\_\_\_\_\_ is writing a process-control language for optical scanners

\_\_\_\_\_ is developing a process-control language simulator for the CDC 3500

\_\_\_\_\_ is generating a complex integration package

\_\_\_\_\_ is writing programs for computer-generated holograms

\_\_\_\_\_ is analyzing optical systems in dynamic environments

If you can fill any of the blanks or can help in any of the other areas, see us at the Sheraton Boston Hotel during the Spring Joint Computer Conference. If you can't make it, drop a resume in strictest confidence or call Mr. Ed Mulkern, (617) 236-2030.

**Itek Corporation**  
optical systems division

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## Data Devices To Debut at SJCC

PHOENIX — Several new data communications devices will be demonstrated publicly for the first time by Omnitec Corp., a subsidiary of Nytronics, at the SJCC in Boston this week.

The Model 812 keyboard tape subsystem combines a keyboard terminal, strip printer, acoustical coupler, and magnetic tape cartridge. It provides a choice of communications from the terminal environment: keyboard to tape; coupler to tape; and tape to coupler.

The Model 806, companion unit for the 812, is used at the computer site to restructure IBM-compatible tapes for direct computer input. The unit is fed from the tape cartridge produced on the 812 terminal.

The Model 811A keyboard terminal features BCD code for computer input, and a strip printer which operates at 15 characters per second.

The Model 701A acoustical coupler introduces into the terminal environment of a remote computer user a dual-mode capability for simultaneous input from any teleprinter, remote plotter, or other EIA devices.

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Immediate opportunities exist for systems and applications programmers to participate in the design and development of large management information systems to support commercial services. Applications will include Configuration Management, Manufacturing Control, Inventory Control and Financial Management. Previous experience with third generation hardware and knowledge of COBOL is required. BS degree is preferred.

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**COMPUTER GUIDANCE CORPORATION**  
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The new Series 800 terminal computers from Victor Comptometer Corp. can be expanded from simple, basic billing computers to a data communications network of desk-size general-purpose computers, the company says.

## 'New' Computer Company Offers Series of Expandable Computers

CHICAGO — A new computer company — the 51-year-old Victor Comptometer Corp. — has announced a line of desk computers which will be delivered with programs already loaded.

The line is designed for small and medium-size businesses as complete systems or as terminals to communicate with larger computer systems. The machines are intended for accounting/billing machine applications, data collection, and communication utilizing on-line and off-line data terminals. Cost will range from \$7,000 to \$100,000.

Victor is stressing ease of installation. Computers will be programmed to the user's re-

quirements before installation at no extra cost. In addition, Victor Temporaries offers complete office staffs of temporary employees to handle a company's conversion from manual to electronic data processing, a Victor spokesman said.

The systems already have been marketed in Europe, where there are now more than 7,000 installations, he said. The company claims that the system currently accounts for two out of every three computer installations being made in West Germany.

System design follows the building-block concept. As more capacity or additional functions are required, new units can be added while original equipment

is retained, the spokesman said. In addition, any Victor 800 system can be installed as an off-line device and later converted to an on-line member of a computer network, he said.

Victor reports that the basic system, the 820/20, is in the same price range as electronic billing/accounting machines but has the decision-making ability of larger computer systems. A larger version, the 820/30, can handle two continuous forms or two magnetic ledger cards at the same time, the spokesman said.

Two terminals are offered, the 820/03 and 820/04. Up to 32 terminals can be operated by one control unit, he said.

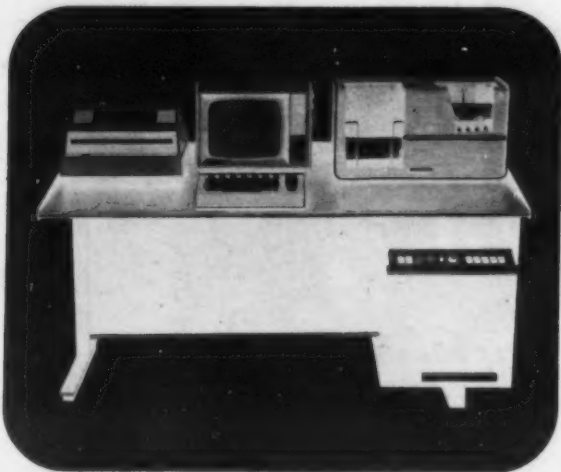
The 820/51 data transmission and control unit transmits and receives data from terminals and off-line magnetic tape units or on-line remote computers. The 820/56 magnetic tape drive is also available, he said.

Victor Comptometer has offices at 3900 N. Rockwell St. here.

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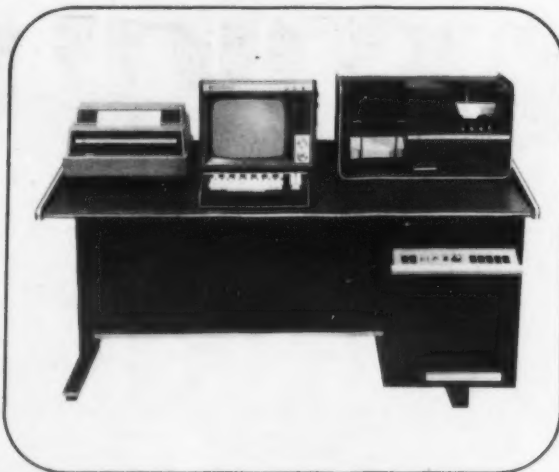
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#### In Conversational Applications

The CC-36 allows you to create formats, input formats and data to files, create and submit executive programs, access files for visual examination or editing at the station, and request file data printout at other remote terminals.

So if you want a dual-purpose station at less than single station cost, consider the CC-36.

#### In Batch Applications

The CC-36 allows you to enter a program from any remote location via the card reader into the central computer, monitor and control its execution via the CRT/keyboard, and receive the output on the line printer.

Feature for feature the CC-36 is another reason why ability in computer communications means Computer Communications.

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## DEC's PDP-15 To Be Shown During SJCC

MAYNARD, Mass. — A new "midi-computer" has been announced by Digital Equipment Corp. for display at the Spring Joint Computer Conference.

Designated the PDP-15, the processor features a cycle time of 800 nsec per 18-bit word. Add time is said to be 1.6  $\mu$ sec.

Using a Teletype as standard input device, the system can be expanded from 4K to 128K words.

It is designed for a range of applications, including physics, chemistry, communications, and biomedicine.

The company says that prices begin at \$16,500, varying according to the configurations selected.

It is claimed to have an independent I/O processor, allowing memory processing and I/O operations to occur concurrently in overlapping cycles.

Other peripherals are available, including paper tapes, printers and plotters, tape and disk storage, and a variety of display devices.



A basic PDP-15 system



# Be a World War I ace for a couple of minutes.

During the three days of the 1969 Spring Joint Computer Conference, Commonwealth Computing will present a special exhibit of World War I aircraft at Boston's Prudential Center.

It's designed for the DP manager who'd like to get away from the third generation, to a much earlier one. If only for a few minutes.

The vintage planes we'll display still fly today. They're authentic right down to the last wing strut.

You'll see a Nieuport 28 that carries the 1918 markings of the American 94th Squadron. It's the type flown by Eddie Rickenbacker early in his remarkable eight-month aerial combat career. The incredible Canadian ace, Billy Bishop, was in a Nieuport when he brought down four adversaries in a single engagement.

You can also inspect a Fokker DR-1 Triplane, the type used by the legendary Manfred von Richthofen to score many of his 80 victories. Although this fighter was one of the most highly maneuverable aircraft of the period, the Baron's Flying Circus found that it had an unpredictable tendency to fall apart in mid-air.



Flying authority Jim Leggett of the internationally famous Old Rhinebeck Aerodrome, Rhinebeck, New York, will show you around the planes and answer your questions.

We'll even take your picture in a 1917-style flying jacket, helmet and goggles, ready to take up your trusty Nieuport. Or have yourself snapped as the Red Baron, just after eluding Snoopy one more time.



We have another surprise for every DP manager who visits us at the Commonwealth "Plane Truth" suite in the Statler Hilton . . .

You'll receive your personal copy of Joseph A. Phelan's folio-size book, "Heroes & Aeroplanes of the Great War 1914-1918," recently published by Grosset & Dunlap. It's a superb 123-page collector's item, featuring 400 original illustrations of those dashing aircraft and airmen, many of them in full color.



The exhibit will be held on the North Plaza in front of the Prudential Tower, facing Boylston Street. It's just a few steps from the entrance to the War Memorial Auditorium.

We'll meet you back at the field, May 14th.

## Commonwealth Computing Inc.

Corporate Headquarters: 60 Hickory Drive, Waltham, Massachusetts 02154

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## Firm to Offer Time-Sharing On Univac 1108

LOS ANGELES — A time-sharing center utilizing a Univac 1108 is scheduled to begin operation in July by Intranet Industries, Inc., a Los Angeles-based computer time-sharing company.

Billed by the company as "the first commercially available time-sharing service based on a large-scale computer," the center is to be located in the Los Angeles metropolitan area. The company has indicated that similar 1108-based systems will follow in other major metropolitan areas.

The company points out that although several Univac 1108s are currently in use, none is operating in a time-sharing mode.

In addition, the company claims a "unique concept" in that it is "assuming total responsibility for both software and hardware." This is said to include all software development and hardware configuration design, including terminals and data communications equipment.

It is further specified that in instances where existing hardware is inadequate for customer requirements, Intranet "will design and manufacture the needed equipment." Also, under certain circumstances, the company would lease and maintain the software packages. Such a system is currently being designed for a mainframe manufacturer, a company spokesman said.

Intranet recently changed its name from Information Industries, Inc. A company spokesman pointed out that the change was made "to avoid confusion between the company and other computer industry firms in key Eastern areas where Intranet Industries plans to establish time-sharing centers."

## Computer Field Gets New Word: 'Jurimetrics'

MONTREAL — Jurimetrics is a new word coined to cover applications of computers to the law and legal processes. Two universities have received \$35,000 from the Canadian government to study the problem.

Queen's University here is concerned with English Canada's common law, and the University of Montreal covers Quebec's civil law. The two schools are working together on jurimetrics research. One of their projects is to set up a computer information system which would offer explanations of the differences between the two sets of law in any specific instance.

Another aim was outlined by Justice Minister John Turner. He predicted that someday a lawyer would be able to slip a quarter in a data machine and immediately receive a copy of a federal statute "complete with amendments that were made to it three days ago."



May 14, 1969

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## Software Is Forced to Take a Back Seat at Shows

By Peter L. Briggs  
CW Staff Writer

BOSTON — It looks as though the hardware producers will have

it all over the software houses and software products again this year at the Spring Joint Computer Conference. It is certainly much easier to bring a new

computer or terminal into a show like this than it is to bring in an operating environment for a software package.

If a new terminal is pretty, or has some form of sex appeal to users or manufacturers, its maker doesn't even need to run it during a show. If he does want to run it, all he has to provide is a telephone link to a computer somewhere else. The same applies to most other hardware.

Software presents a different, and perhaps more serious, problem. How do you display a batch payroll system? If the package is

an on-line program, you are all set. You simply provide the necessary terminals, a pretty operator, and the telephone link. If, however, as most packages still are, the particular package is either batch oriented, or designed to fit some special application, it becomes impossible for the designer to bring it to a show.

Somehow, literature and smooth sales pitches don't quite make up for the lack of personal experience. People still prefer to see something run before they buy it. (Isn't that strange?) If no

operational system is in evidence, very few people will bother to stop at a booth.

Of some 170 exhibits, about 10 are exhibiting software systems. Most of these are exhibiting on-line software of some sort or a service-oriented, consulting capability.

As the trend towards on-line software continues, more exhibits should be available, but for the present, it looks like those interested in seeing new software will just have to depend on other sources than the national exhibits.

### 'Meaty' Package Offered For String Manipulation

BETHESDA, Md. — A package called Beef2/360, which permits S/360 Fortran and Cobol programmers to manipulate and test binary bit and byte strings efficiently and conveniently, has been released by Computation Planning Inc.

The package is substantially hardware-independent, according to the company, and aids in the efficient programming of many different types of applications including personnel, inventory, order processing, and accounting systems, for which the company feels that the use of bit-strings can significantly improve operating efficiency and programming ease.

It consists of 52 callable operations of nine types, such as string manipulation, decision making, searching, conversion, and character-code transformation. The decision-making ability provides many of the features of decision-table compilers, although not in as convenient a form, due to the lack of tabular notation.

Beef2/360 is suitable for any of the S/360 operating systems,

the company said, and sells for \$4,750 per first installation. It is also available on a lease basis.

The company has offices at 5401 Westbard Ave. here.

### General Ledger System Revised

WASHINGTON, D.C. — Service bureaus may now obtain a new, bureau-oriented version of Delta Data Systems' General Ledger System, according to the Maryland-based company.

The system, which consists of 17 programs and sort routines, is written in Cobol and designed for operation on the IBM 360 with either disk or tape configurations.

"In slanting the General Ledger System to the service bureau environment," said Jack Fisher, director of technical documentation, "we have expanded the system to accommodate the accounting needs of a variety of types of businesses, while still providing rapid, accurate, and inexpensive processing."

Fisher also pointed out that the General Ledger System is designed to interface with several other products from the company including the accounts payable, accounts receivable, and payroll systems. Pricing arrangements for single or multi-package installation are available through negotiation, depending on the amount of service needed and the number of packages included, Fisher said.

Delta's headquarters is at 9903 Rhode Island Ave., College Park, Md.



The computer world discovers the people-pleaser

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# Software Package Designed for Drug Control Records

NEW YORK — A computerized system for handling, processing, and controlling community pharmacy or mail-order drug programs has been announced by Seymour B. Jeffries, chairman of Comprehensive Computer Systems, Inc.

The company is offering the large-scale system to federal, state, and local public assistance agencies, Blue Cross health plans, insurance companies, trade unions, and other third-party underwriters.

The system also includes quality assurance monitoring of participating pharmacies and pharmaceutical manufacturers.

The first drug plan is already in operation, serving members and their families of the International Ladies Garment Workers Union,

which has a membership of 450,000. According to Louis Rolnick, director of ILGWU's Welfare and Health Benefits Department, more than two million prescriptions will be filled under the plan each year.

The CCS system includes not only drug claims processing and reimbursement, but also the application of drug utilization review and fraud controls.

CCS provides planning, arranging, and negotiating for sources of supply and pharmacy services. In addition, CCS provides on-site inspection of dispensing facilities and quality-control monitoring of products dispensed.

"We help assure the third-party agency, its members, and their families the highest quality med-

ication and pharmaceutical services," Jeffries declared. "We are doing this at present for the ILGWU — which is the first union to institute such a nationwide mail-order drug program."

Union members receive an identification card which permits them to order drugs via mail from participating pharmacies, enclosing the prescription and their \$1 co-payment for each prescription. The druggist bills the third-party

insurer (the union) for the difference between his charge and the union member's payment.

Comprehensive's Medidata subsidiary receives the dispensary's drug claim (invoice), processes and checks it against central member files, and prepares reimbursement records.

All operations are performed on a high-speed computer at Medidata's data processing center in New Jersey, thus assuring fast and accurate record keeping

and payments.

Pricing and drug usage studies are also performed by the computer. Automatic checks and reviews to prevent abuse of the program are regularly made, Jeffries said.

Where the third-party underwriter has its own data processing center, Medidata will provide complete computer systems programming and will train personnel to operate the entire program internally.

## Revised Accounting System Is Offered

WASHINGTON, D.C. — Service bureaus can now obtain a special version of the Delta Data Systems accounts payable system, it was announced here re-

cently.

The system, which consists of 22 programs and sorts, is written in Cobol and designed for S/360 computers of M30 or larger con-

figuration. The system operates in either disk or tape environments.

"In orienting the system to the service bureau environment," said Stuart Trooskin, director of plans and programs for the company, "we have expanded the system to be able to accommodate the accounting needs of a large number of different businesses, while still providing rapid, inexpensive, accurate processing of data."

He made special mention of some of the features of the system. He said that it included automatic date calculation for due dates, and discount amounts and net amounts for each invoice, based on payment terms offered by individual vendors.

The company, based in College Park, Md., has been greatly involved lately with accounting systems, and has released several over the past few months.

## Program Handles Depreciation Tax

SAN DIEGO, Calif. — A Depreciable Property System for large corporations has been released and is operational here for several corporations.

The package, which sells for \$2,000, is written in Fortran and includes several outputs. The (C-2) federal depreciation schedule for taxes, the location of property by class, location historical report, legal corporation by property class, transaction report, and account ledger cards for both reserve and expense are the primary outputs.

The package includes manuals, flowcharts, installations, training, and maintenance. The \$2,000 price includes everything except travel expenses, according to Process Consulting and Computing, Inc., the developer, of 5305 Metro St. here.

## 1130 Remote Job Entry Available

WILMINGTON, Mass. — An IBM 1130 remote job-entry package which communicates with a 360 system operating under the Attached Support Processor system (ASP) has been developed by Avco Computer Services.

Using the Synchronous Transmit Receive (STR) mode of operation, the system communicates over normal voice grade lines at a rate of up to 250 cards and 300 lines per minute, the firm said.

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## New Services: Safe Service Provides Tape and Card Protection

BELMONT, Mass. — Comp-U-Safe, a new service announced by Phoenix Corp., will safeguard tapes, cards, and records against loss or destruction. Fire, flood, and urban or campus unrest need no longer menace valuable programs, business records, and mailing lists through this service, the company maintains.

Phoenix Corp. will store duplicate copies of your computer tapes and records in an entirely environmentalized and insured facility, remote to your installation at a cost of \$3 per tape per year. Quantity discounts are available.

Phoenix Corp. is located at P.O. Box 185, Belmont, Mass. 02178.

### OCR for Cherry Hill

CHERRY HILL, N.J. — Computer Data Services, Inc., a new subsidiary of American Micromation Industries, will provide optical character reading on a service bureau basis.

A Scan Data System 300 optical character recognition page reader is on order slated for early delivery, according to the company.

Output from the 300 will be 800 bpi, 9-channel magnetic tape which can be converted to 7-channel magnetic tape, cards, or magnetic disk.

The 300 system will also recognize 1403 OCR font from high-speed printed documents and OCR-B for upper and lower case typewriter applications on bond paper instead of the more expensive OCR paper.

Anthony M. Sindoni, vice-president of the new firm, stated that the turn-around document application will also be one of the OCR services offered.

A KOM 90 Magnetic Tape to Microfilm Converter is available on a service bureau basis, in addition.

The company is located in Suite 205,

1030 N. Kings Highway, Cherry Hill, N.J.

### Software Clearing Service Eliminates Duplication

WELLESLEY, Mass. — Automated Information Systems is now providing a professional software clearing service. Robert P. Santis, president, says:

"It is no secret that computer users are paying the hidden and terribly expensive cost of duplication of effort, they are pouring precious manhours into problems which have already been solved a hundred times before."

He believes, "One solution to reduce this enormous programming cost is to apply mass production techniques to the software industry. This requires that the cost of a software package be amortized over a number of sales."

He maintains, "A software package that might cost a computer user \$250,000 to develop could be installed at one-half to one-fifth of that price if he were to purchase the package from an outside source and tailor the package to meet his company's needs. He could also save time and perhaps have a more reliable system."

"However, it is not that simple. For after the computer user decides to consider the use of a package he must then sift through the thousands of packages that are available throughout the country."

Automated service provides users a list, at no cost, of packages classified by: minimum hardware configuration; special hardware features; operating systems and release number; price; current users of package; design features, expandability, generality, documentation; and technical support available.

The search is now quickly narrowed to several packages which appear to satisfy

the user's needs and negotiations between the potential user and the package owners can now be scheduled.

### Computerized Typesetting Goes Nationwide

LOS ANGELES — Auto-Graphics, Inc., a computerized typesetting firm, has expanded its operations to national scope with the opening of three branch offices, according to the company.

New York City, Chicago, and San Francisco are the sites of the new offices. Auto-Graphics' headquarters remain in Monterey Park, Calif.

Auto-Graphics began with a Bunker-Ramo 230B system in 1964. This was superseded in 1967 by an RCA Spectra 70/35 computer and a Videocomp electronic typesetter.

Price books, catalogs, directories, technical manuals — all types of repetitive publication — are natural candidates to

benefit from computerized typesetting, the company says.

### Service Center for Drug Applications

NEW YORK — Data processing "Facilities Management" and other services uniquely tailored for the specific needs of the drug industry have been announced by Cambridge Computer Corp.

Cambridge will now provide management and operation of a client's data processing facility as well as provide support for its "Facilities Management" service to clients with services in consulting, proprietary programs, education, and hardware.

Cambridge is made up of a group of experts in the drug industry and in data processing, according to a company spokesman.

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## How to handle a head hunter



The trick is to turn the interview to your advantage. To wit: what are *his* qualifications for assessing and marketing your own? Is *he* willing to discuss his own education and experience? Can he talk intelligently in the entire realm of edp? Does he know of all the various opportunities in terms of geography and potential?

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Every industry has its Big Mother.  
And so the cry goes on:

"You can't argue with success.  
So do it like she does."

And a thousand bland, mediocre  
ads lull the industry into a  
slumbering sameness.

And what a shame.  
So many companies have the  
competence to stand on  
their own two feet.

Big Mother's advertising may be  
OK for Big Mother, but

Mr. J. C. Callihan, President, Davi-Callihan, Inc.,  
15 W. 44 St., New York, N. Y. 10036 (212) 661-1080

Yes, I'm letting loose of Big Mother's apron strings.

☐ Send me a "Big Mother, You're A Bore" button for use  
at my next sales meeting.

☐ Also tell us how to compete with Big Mother with bet-  
ter ideas rather than bigger budgets.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

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IT'S A SIN TO BORE PEOPLE. WE TRY NOT TO.

**DAVI-CALLIHAN, INC.**

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as the creative formula for the entire  
industry, it's a bore.

At best, copycat advertising is  
second best advertising.

Which is why people get bored.

Mimics miss the mark.

Sameness turns people off.

Opportunities for building a distinct  
company character slip by.

So we say, let's declare war on  
boredom. Do something different.  
Be best.



May 14, 1969

Page 49

# Watson Reiterates That IBM Has No Industry Monopoly

(Continued from Page 1)

said, "In our view, the economic characteristics of today's computer industry refute the existence of a monopoly by any one company."

As an example of the competitive nature of the industry, Watson noted that "since 1960 the number of computer manufacturers has more than doubled, and today there are over 70 manufacturers of systems—some of them very large and well-known—actively competing in the computer market."

"Another 4,000 companies also offer peripheral equipment, programming support, and other services to computer users," he added. "Many of these com-

panies have been very successful, some in just a few years."

Acknowledging that IBM is a big company, he said, "Bigness alone is no assurance of continued success. Rather, our industry is one of ideas, and the business edge is provided by the creative mind and the innovator. These are not a function of size."

Last December's announcement that by July 1, 1969, IBM expects to make changes in the way it charges for and supports its data processing equipment was reiterated by Watson.

As a result of fast-changing data processing market conditions, he said, the requirement for increasingly complex and

comprehensive systems support is growing more rapidly than anticipated.

IBM is re-examining its methods of doing business to determine what support services should be separately offered and priced to better meet the future requirements of all users of IBM equipment, the company has said.

Watson added, "We believe the ultimate effect of any changes we make to meet these requirements should benefit the data processing industry by expanding available equipment and service offerings and markets."

Some of the more outstanding answers to stockholder questions included:

- IBM considers a recent court judgment of \$485,000 for Clements as unfair and intends to appeal it.

Watson mentioned, "After we make a computer and get it to work properly, we feel a large part of the responsibility lies with the customer."

"This time we've been ordered by the court to pay damages for malfunction."

"That's almost like selling a chain saw to someone and then being asked to pay damages because the saw fell out of a tree and cut the customer's foot."

- IBM spends about \$40 million a year on basic research.

- Repeal of the 7% investment tax credit will have a negligible effect on company spending and less than a 4-cent a share effect on earnings.

- IBM is offering more stock options, incentive bonuses, and

greater entrepreneurial responsibilities in an attempt to cut down the rate of employee turnover.

## Directors Re-elected

Stockholders re-elected 16 directors with the exception of Sherman M. Fairchild, chairman of the Fairchild Camera and Instrument Corp. and the Fairchild Hiller Corp., who did not desire to run again.

## Increase Forecast

A rapid increase in new uses for computers was forecast by Watson.

Stating that the industry is still in its formative stage, Watson noted a trend toward the use of computers in information networks that link many people at widely separated locations.

This is made possible, he said, by faster, more powerful computers, and by the development of input and output devices that allow communication with the computer over any distance.

The directors also declared a regular quarterly cash dividend of 80 cents a share on the common stock, payable June 10, 1969, to holders of record May 8, 1969.

## CDC Adds Sales Revenue By Selling Lease Rights

MINNEAPOLIS—Sales revenues for the current quarter were increased by \$6.7 million through the sale of computer lease rights by Control Data Corp. Revealed recently by William C. Norris, chairman and president, these sales were made to a financial institution under a recently developed program, the objective of which is to maintain a more orderly relationship between the growth in the company's sale and lease business.

In connection with the sale of lease rights, Norris said such sales result in immediate revenues, as contrasted to normal lease revenues which are realized over a period of time.

The amount of such a sale is determined by discounting to present value, at the equivalent of a reasonable interest cost, the future lease revenues which are being sold.

In addition, the company is able to minimize the costs associated with such sales by the investment of some or all of the net proceeds of such sales in interest-bearing certificates of deposit or by the maintenance of compensating balances, the chairman added.

Lease rights are sold for a specified period of time not to exceed 48 months, and any rental revenue or residual value realized beyond that period is retained by the company.

Norris stated that although the company expects its computer system shipments to increase by about one-third during this year, consistent with its objective of increasing the base of lease business, it does not plan to sell lease rights amounting to more than 15% of the value of computer shipments during 1969.

Norris also mentioned that the company's ability to sell additional lease rights could be influenced by changed conditions in the money market.

## Quarter Results

Norris also announced the operating results for the quarter ended March 31, 1969.

Consolidated net earnings for

the three months ended March 31, 1969, were \$17,432,000 which, after preferred stock dividends of \$397,000, amounted to \$1.23 per share of common stock.

For the comparable quarter in 1968, consolidated net earnings were \$10,671,000 which, after preferred stock dividends of \$397,000, amounted to 75 cents per share of common stock.

Earnings for the current period include extraordinary income of \$3,499,000, or 25 cents per share, realized from the sale of certain manufacturing subsidiaries of Commercial Credit Co.

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Now you can order your disk packs from Tab, the computer companion people. Convenience and efficiency are great—one order can cover all your data processing accessories requirements. One order, one responsible source, one invoice. Wonderful. Tab Products Company, San Francisco, California 94111.

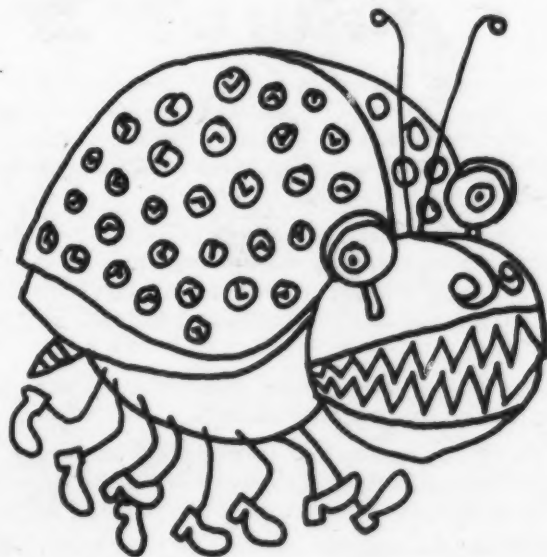


**TAB**  
PRODUCTS CO.

## Computer Bugs

(and how to get them out of your system)

Bug **1**



## the terrible time tick

He can paralyze a data processing system overnight with new demands for information. He calls for systems analysis and complex programming during peak work loads. He eats away hours, days and weeks. He has even been known to swallow months whole.

Many busy data processing departments just don't seem to have the time anymore to absorb new work loads. Especially when the new application calls for complex systems analysis and time-consuming programming work. The need for a competent outside service organization is obvious.

This is where the PRYOR Computer Software people come in. Literally come in to save you days and weeks of difficult analysis and programming time. Time after all is money. And the skill and experience of the professional people at PRYOR can save you plenty of both.

Another computer bug bites the dust.

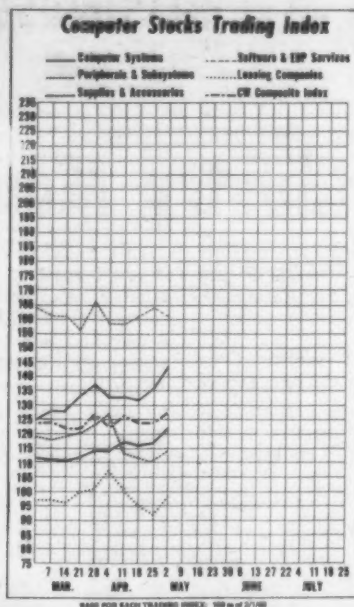
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## Computers: What's their future?

The special Review and Forecast issue of *EDP Industry Report*, just published, contains a valuable analysis of the explosive computer industry at a time when there are significant transitions occurring in the EDP market.

Among the issue's features are careful analyses of IBM and the other major computer manufacturers... industry shipment projections through 1975... a presentation of trends to watch for in the industry.

This Review and Forecast issue will bring you up to date on the computer industry.

One of the twenty-four issues published throughout the year, this issue can be yours for \$9, or as a free bonus with your subscription — \$75/yr. Write:

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**ME**

## Systems Sector Shows Good Gains In Strong Market

By A.B. Williams  
CW Staff Writer

"Solid" peace rumors sparked a strong market upsurge. While the Dow Jones industrial average was going up each day of the week ended May 5, the CW Composite index followed suit with a gain of 3.9 (3.1%), closing at 128.5.

The Computer Systems group was the standout gainer, with 15 of the 16 issues rising. The sole loser, Collins, appeared to be reacting to the fadeout of both of its possible merger situations.

Featuring the sector rise of 6.8 (5%) were new highs in Control Data, GE, Honeywell, IBM, NCR, Scientific Data, Sperry Rand, and Scientific Control.

The Peripherals group was equally strong, overall. The index rose 5.9 (5%), closing at 116.4. Cognitronics overshadowed all other gainers, with a hefty jump of 11 (46%), to close at 35.

Many others were well up. The few losers were all under 5%, while a total of eight tacked on 10% or more. New highs included Addressograph and Ampex. The latter closed at a new high.

The Supplies group saw Memorex reacting strongly to recent weakness with a gain of 9-1/4 (11.7%) to 88-1/4. Again, losses were all under 5%.

The only sector to show even a minor loss was Software, which edged down 1.4 (0.9%) to 162.9. This slip occurred despite a new high in Computer Sciences, still showing the benefit of a strong earnings statement. Computing & Software was also solidly up, gaining 7-5/8 (16%), finishing at 54-3/4.

Leasing companies reversed a downward trend, gaining 4.4 (4.7%) to 98.3. Here again, gains outnumbered losses by more than two to one.

## COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED APRIL 25, 1969

COMPUTER SYSTEMS					
EXCH	1969 RANGE	CLOSING PRICE	WEEK NET CHANGE	WEEK % CHANGE	
N	138-181	126 1/2	BURROUGHS CORP	+ 2 1/4	1.81
N	69- 48	54 1/8	COLLINS RADIO	- 6 1/4	-10.35
N	132-125	155 1/2	CONTROL DATA CORP	+ 6 1/2	4.36
A	175-138	171 5/8	DIGITAL EQUIPMENT	+ 12 5/8	7.94
N	25- 18	21 1/4	ELECTRONIC ASSOC.	+ 2	10.39
N	96- 85	97 5/8	GENERAL ELECTRIC	+ 5	5.48
N	89- 75	85 7/8	HEWLETT-PACKARD CO	+ 7/8	1.03
N	140-107	139 1/2	HONEYWELL INC	+ 5 3/4	4.30
N	330-292	326 1/2	IBM	+ 8 3/4	2.75
N	133-108	133 1/2	NCR	+ 4 1/2	3.49
N	40- 41	46 3/8	RCA	+ 3 1/2	8.16
N	50- 37	40 1/8	RAYTHEON CO	+ 2 1/8	5.59
O	43- 24	29 1/4	SCI. CONTROL CORP.	+ 3 1/4	12.50
N	108- 83	127	SCIENTIFIC DATA	+ 10 1/4	8.78
N	55- 44	54 3/4	SPERRY RAND	+ 1 7/8	3.55
A	36- 26	35 1/4	SYSTEMS ENG. LABS	+ 3 1/2	11.02

PERIPHERALS & SUBSYSTEMS					
EXCH	1969 RANGE	CLOSING PRICE	WEEK NET CHANGE	WEEK % CHANGE	
N	82- 65	78 3/8	ADDRESSOGRAPH-MULT	+ 5 1/8	7.00
O	71- 32	32 1/4	ALPHANUMERIC	- 3/4	-2.28
N	44- 32	44 3/4	AMPX CORP	+ 5 5/8	14.38
O	19- 14	16 1/4	BOLTER, BERANEK & NEW	+ 1/4	-1.52
N	17- 12	14	BUNKER-RAMO	- 3/8	-2.61
A	37- 27	31	CALCOMP	- 3/8	-1.20
O	38- 23	35	COGNITRONICS	+ 11	45.83
O	15- 12	15 1/2	COMPUTER EQUIPMENT	+ 3/4	5.08
A	27- 16	19 7/8	DATA PRODUCTS CORP	+ 3 1/8	18.66
O	22- 15	16 3/4	DIGITRONICS	- 1/4	-1.47
O	42- 46	42 1/2	ELECTRON MEMORIES	+ 6 1/2	11.61
O	12- 10	11	FABRI-TEX	+ 5/8	6.02
O	37- 29	35	FARRINGTON MFG	+ 3 1/2	11.11
O	21- 15	16	INFORMATION DIS	---	---
A	34- 20	22	MILGO ELECTRONICS	+ 3 5/8	14.87
A	79- 59	76	MOHAWK DATA SCI	+ 1 1/4	1.67
O	118- 54	68	OPTICAL SCANNING	+ 4	6.25
O	28- 21	29	PHOTON	+ 3 3/4	14.85
A	35- 27	30 3/4	POTTER INSTRUMENT	+ 3/4	2.50
O	76- 54	69	RECOGNITION EQUIP	+ 6	9.52
A	22- 18	20 3/4	RIXON ELECTRONICS	+ 1/8	.61
N	61- 40	44 1/2	SANDERS ASSOCIATES	- 3/8	-0.84
O	85- 55	67	SCAN DATA	+ 1	1.52
O	36- 22	26	TALLY CORP.	- 1	-3.70
N	272-241	269	XEROX CORP	+ 10 7/8	4.21

SUPPLIES & ACCESSORIES					
EXCH	1969 RANGE	CLOSING PRICE	WEEK NET CHANGE	WEEK % CHANGE	
O	47- 32	39 1/2	ACME VISIBLE	+ 2	5.33
N	22- 17	18 1/8	ADAMS-MILLIS CORP	+ 7/8	-4.61
O	27- 23	26 1/2	BALTIMORE BUS FC	- 1/2	-1.85
A	29- 18	20 7/8	BARRY WRIGHT	+ 1 1/2	7.74
O	44- 35	37 1/2	DATA DOCUMENTS	---	---
N	42- 37	39 1/2	ENNIS BUS. FORMS	- 1/4	-0.63
N	88- 65	88 1/4	MEMOREX	+ 9 1/4	11.71
N	106- 94	106 3/4	3M COMPANY	+ 6	5.96
O	34- 29	32 7/8	MOORE BUS FORMS	+ 7/8	2.73
N	46- 36	42 1/2	NASHUA CORP.	+ 2 1/4	5.59
O	48- 36	43 1/2	REYNOLDS & REYNOLD	- 1 1/2	-3.33
O	28- 23	27 1/2	STANDARD REGISTER	- 3/4	-2.65
N	36- 28	34 7/8	UARCO	+ 1 5/8	4.89
A	20- 14	16 3/4	VABASH MAGNETICS	+ 1/2	3.08
O	34- 29	33 3/4	WALLACE BUS FORMS	+ 3 1/4	10.66

SOFTWARE & EDP SERVICES					
EXCH	1969 RANGE	CLOSING PRICE	WEEK NET CHANGE	WEEK % CHANGE	
O	14- 7	8	ADVANCED COMP TECH	+ 1/4	3.23
O	36- 31	35	APPLIED DATA RES	+ 1 1/2	4.48
O	19- 8	10 1/2	ARIES	- 1 1/2	-12.50
A	83- 63	81 1/2	AUTOMATIC DATA PRC	+ 8 5/8	11.84
O	13- 7	10 1/4	AUTO SCIENCES	+ 1 1/2	17.14
O	17- 12	12	BRANDON APPL SYS	- 1/2	-4.00
A	21- 14	14 7/8	COMPUTER APPL	---	---
O	16- 11	12	COMPUTER ENVIRONME	+ 1/2	4.35
O	47- 34	35	COMPUTER NETWORK	---	---
N	73- 49	72	COMPUTER SCIENCES	+ 2	2.86
O	40- 24	27 1/2	COMPUTER USAGE	+ 1/2	1.85
A	56- 37	54 3/4	COMPUTING & SOFT	+ 7 5/8	16.18
O	24- 13	15 1/2	DATAMATION SERVICE	- 1/2	-3.13
O	17- 11	14	DATATAB	+ 1	7.69
O	15- 9	9 3/4	DIGITEK	+ 3/4	8.33
A	38- 27	29 1/8	ELECT COMP PROG	+ 5/8	2.19
O	30- 20	24 3/4	INFORMATICS	+ 2	8.79
O	19- 6	7 1/2	MATRIX CORP.	+ 1 1/2	25.00
O	22- 10	12 1/2	NAT COMP ANALYSTS	- 3	-19.35
A	32- 23	31 7/8	PLANNING RESEARCH	+ 1 7/8	6.25
O	11- 8	10 1/4	PROGRAMMING & SYS	+ 3/4	-8.33
O	10- 6	10	SOFTWARE SYSTEMS	+ 1 1/2	17.65
O	37- 15	17	STRATEGIC SYS	---	---
O	38- 11	29	TBS COMP CENT INC.	---	---
O	12- 6	6 3/4	UNITED DATA CENTER	- 3/4	-10.00
O	155- 76	74	UNIVERSITY COMP	---	---
O	38- 29	31 1/2	URS SYSTEMS	+ 1/2	1.61
O	16- 14	14	U.S. TIME-SHARING	- 1	-6.67

LEASING COMPANIES					
EXCH	1969 RANGE	CLOSING PRICE	WEEK NET CHANGE	WEEK % CHANGE	
O	45- 36	37 1/2	BOOTH COMPUTER	- 1 3/4	-4.46
O	18- 9	12	COMPUTER EXCHANGE	---	---
A	34- 15	16 1/2	COMPUTER LEASING	- 1/4	-1.49
O	14- 8	10	CONT COMPUTER	+ 3/4	8.11
O	12- 9	10 1/4	CYBER-TRONICS	+ 3/8	3.80
A	60- 36	37 5/8	DATA PROC. F & G	- 3/4	-1.97
O	16- 7	11	DATRONIC RENTAL	+ 1 1/4	12.82
A	52- 38	42 3/4	DEARBORN COMPUTER	+ 3/4	1.79
O	16- 10	14 1/4	DPA, INC.	+ 3 1/4	29.55
A	45- 26	31 7/8	GRANITE EQUIPMENT	+ 4 3/8	15.21
A	28- 19	21 5/8	GREYHOUND COMPUTER	+ 1 5/8	8.12
A	54- 36	44	LEASCO DATA PROC.	+ 2 5/8	6.34
O	9- 7	8 1/2	LECTRO COMP LEAS	+ 1/4	3.03
A	57- 34	40	LEVIN-TOWNSEND CMP	- 1 1/4	-3.03
O	8- 4	6 1/4	LHC DATA, INC.	- 1/2	-7.41
O	14- 7	9	MANAGEMENT ASSIST	+ 7/8	10.77
A	39- 28	32	NATIONAL EQUIPMENT	+ 2	6.67
O	12- 6	7 3/4	NCC LEASING	+ 1	14.81
A	43- 27	30 1/8	RANDOLPH COMPUTER	- 1/8	-0.41
O	34- 13	15 1/2	SYSTEM CAPITAL	+ 1	6.98
A	28- 18	22 3/8	U.S. LEASING	+ 1/8	.56



## Leasco Plans to Invest \$100 Million for T/S

PHILADELPHIA — Leasco Data Processing Equipment Corp. has launched a program expected to cost \$50 million over the next two years in an effort to become a dominant factor in the time-sharing market.

Saul P. Steinberg, chairman of the New York concern, recently told the Financial Analysts of Philadelphia the program, designed to create an international information network by 1975, could cost the company as much as \$100 million by that time.

Steinberg said the program was designed to capture 10% of the international time-sharing market by 1974-75 and 25% by 1978-80. He added that rough estimates have put the eventual size of the worldwide time-sharing market at anywhere from \$2 billion to \$4 billion.

The youthful executive said the planned operational areas include science and engineering, business applications, education, data storage, and text processing.

Steinberg disclosed that the first program has been developed in the business area which will try to provide low-cost computer power to small- and medium-sized industries.

The initial program has been developed for fuel oil dealers whose business is characterized by a large number of accounts. Steinberg said the program provides quick calculation of consumption factors, provides truck routing, handles billings, and delivers other needed services.

### Operations Are Good

The Leasco chief said both the company's computer leasing and software operations are running ahead of year-ago levels. He said this was a pleasant surprise in the leasing area because the company had expected some tailing-off in volume when it launched, last Oct. 1, a policy of utilizing minimum five-year leases.

However, he said in the first fiscal half ended March 31, purchases of new equipment for leasing climbed to \$68 million from \$58 million a year ago at home and to \$28 million from \$3 million in Europe.

Software volume, he said, has been running at the rate of \$60 million annually, compared with \$28 million last year.

Steinberg said profits for the first half ended March 31 should top earnings for the same six months ended March 31, 1968. He estimated earnings for the half a year ago at \$1 a share, restated for acquisitions and adjusted for a two-for-one stock split and possible dilution through conversion of other securities into common stock.

Although conceding that Reliance Insurance Co., Philadelphia, control of which was acquired in 1968 through a tender offer, accounted for the bulk of Leasco earnings, Steinberg said that by fiscal 1970 computer services should "just about overcome Reliance in terms of earnings."

Steinberg said he expected Reliance to "grow significantly,"

but that it could not match the rapid strides of the computer industry.

In this connection, Steinberg said Leasco currently was not seeking out acquisitions, preferring to concentrate on internal programs which include the time-sharing effort and a plan to design peripheral equipment for manufacture by others. But he said Reliance was casting about for acquisitions in the insurance and financial services field.

However, Steinberg said there were no plans to add a bank to the fold — at least until Congress comes to a decision on legislation regulating one-bank holding companies.

Southern California Regional Occupational Center has installed a General Electric GE-225 general-purpose information system to provide vocational computer training for students of six surrounding school districts. The quarter-million-dollar system provides for many kinds of business data processing and complex engineering calculations.

Riley Stoker Corp. of Worcester, Mass., a manufacturer of steam-generating and fuel-burning equipment for public utilities and industrial power plants, has installed a medium-scale GE-415 information system, which includes a central processor with 16,000 words of

memory, floating point hardware, five magnetic tape units, a card reader, a card punch, and a printer.

The Orange Empire Area Council, Boy Scouts of America, has placed in operation a personnel data computer program designed by the Council and by Management Computer Services Corp. of Anaheim, Calif. The program maintains updated records of more than 25,000 scouts and 9,000 adult leaders in the Orange County area, and automates the Council's mailing of official information to scout members.

The Pharmacists of Hessia, Rheinland-Pfalz, and Saarland,

Germany, will install an Electronic Retina computing reader and high-speed sorting equipment from Recognition Equipment's German subsidiary, GmbH. Valued at \$1.1 million, the equipment will automate drug claim processing. The installation will be the first in Europe used exclusively for direct optical reading of drug claims.

Communitytype Corp. of New York has received an order for a Communitytype Model 105 data communication system from General Inventory Control Inc., a newly formed computer service bureau which plans to specialize in inventory control ser-

(Continued on Page 52)

## Orders and Installations

Announcing two new remote terminals from CII...

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Industry's most complete line of remote communication terminals now includes two new additions — the COPE .30 and COPE .34. These new models broaden the COPE family to six systems, enabling you to choose from a wider-than-ever range of performance and price!

Check the new COPE .30. It's a DIAL-UP system, and features high reliability and very low cost (basic rental per month is \$1,060 plus maintenance). The new terminal is especially suited to small users of other computer systems, offers unique flexibility combined with high processing capability. Card reading speed is 200 CPM; printing speed is 240 LPM.

Require more performance? Then consider the COPE .34. Like its bigger brothers, the .36 and .38, our new mid-range model offers a new capability of operating in either DIAL-UP or COPE modes. It also shares the bigger COPEs' expanded processing capabilities, faster card reading and printing, additional memory and peripheral devices. Along with other COPEs, the .34 offers full duplex concurrent card reading and printing (300 CPM/360 LPM) and provides industry's lowest throughput cost ratio.

The expanded COPE family gives you another important benefit. Starting with the inexpensive COPE .30 you can now field-upgrade to the .32, .34, .36 or .38 to get the performance you want.

All these smaller brothers of the proven COPE .45 system give you the speed and power of a big computer in your own office or plant at a fraction of the big systems cost. And our DIAL-UP COPEs are now adaptable for use with systems such as the IBM 360, Univac 494, GE 635 and CDC 6000 in addition to the Univac 1108.



COPE .30s are in production now with deliveries scheduled for this summer. For more information contact: Marketing Coordinator, Data Communication Systems Division, 2659 Nova Drive, Dallas, Texas 75229, (214) 241-3501.



**COMPUTER INDUSTRIES INC**

DATA COMMUNICATION SYSTEMS DIVISION  
2659 Nova Drive / Dallas, Texas 75229 / A Subsidiary of University Computing Company

## Orders and Installations

(Continued from Page 51)  
vices. This new service will enable clients to know how much and what merchandise they have on hand at any time.

Vereinigte Flugtechnische Werke, Bremen, West Germany, has ordered a Control Data 3300 computer from Control Data Corp. for research in aircraft design.

Knott's Berry Farm, Buena Park, Calif., has installed a payroll and general-accounting program developed by U.S. Systems & Software, Inc. Data processing is accomplished at U.S. System's management computer center at Anaheim, Calif., under contract with Knott's.

Electricite de France, Paris, France, has ordered an Elec-

tronic Retina Computing Reader from Recognition Equipment France, S.A. to process invoices.

The Civil Air Patrol, Maxwell Air Force Base, Ala., has installed an IBM 360/20 for use in maintaining membership reports, education and testing, and rescue support.

Carnegie-Mellon University, Pittsburgh, Pa., has ordered a third-generation Burroughs B2500 valued at more than \$530,000 to provide an effective reporting system to four levels of operations and management.

The Diplomat Hotel, Hollywood, Fla., has ordered an NCR Century 100 for use in providing a daily report on reservations.

The National Insurance for the

Agricultural Cooperatives Federation (Zenkyoren), Tokyo, Japan, has installed a \$3.3 million Univac 1108 for use in processing mutual insurance business of agricultural cooperatives. The computer is installed at the company's data processing center in Atsugi, Japan.

The Bank of Las Vegas, Nev., has installed a Burroughs B3500 computer system to upgrade the services of a B300 currently in use. The bank's computers are processing an average of 75,000 checks per day along with other accounting functions.

Investor's Mortgage Insurance Co. of Boston has installed a National Cash Register Century 100 for processing mortgage insurance accounts.

## Greyhound Computer Cites Dual Roles for Expansion

CHICAGO — Within the next five years, Greyhound Computer Corp. will obtain half of its revenues "from acquisitions and diversification," its chairman and president reported in April.

The executives, writing in the 1968 annual report to shareholders, said GCC acquisitions and diversification will be concentrated "within the computer industry, since it is today's fastest-growing business and can absorb all of our energies and resources."

"This is the area of our expertise. We are convinced that there are unlimited new computer opportunities that will complement and strengthen our existing services," they wrote.

The year past was a record in all categories for Greyhound Computer Corp. Revenues were up 60%; pretax profits, 37%; net income, 33%; and stockholders' equity, 55%.

Greyhound Computer earned \$5.4 million, or \$1.29 a share, up from \$4.1 million, or \$1.09 a share, on gross revenues of \$38.6 million, up from \$24.1 million in 1967.

Pretax profits were \$9.81 million, up from \$7.14 million.

Though profits were 33% greater in 1968 than the preceding year, "a leveling did occur during the fourth quarter," the executive said.

"Heavy startup cost for newly created Greyhound Time-Sharing Corp., for a newly formed computer company in Canada, and a computer service center at Chicago were concentrated in the year's final period.

"And the second generation revenue, while exceeding our \$8 million forecast for 1968, continued to come. By the end of 1969, it should represent only about 5% of our total leasing revenue."

Purchases of \$79 million of new IBM 360 computers were the greatest for any year in the company's history. At year end, computer rental equipment, at original cost, totaled \$198 million.

## Scan-Data Corp Predicts Good Year for 1969

NORRISTOWN, Pa. — Scan-Data Corp., a manufacturer of optical character recognition equipment, has predicted profitable operation for its fiscal year ending Dec. 31, 1969.

Company President Alan I. Frank, addressing the Scan-Data annual meeting, told stockholders, "In 1969, Scan-Data projects profitable operation during the second half and expects to show a profit for the year as a whole."

Frank reported that during 1968, the company had successfully made the transition from a research and development organization to a dynamic business concern involved in full-scale production and aggressive marketing.

"During the year," he said, "we have greatly increased our capital equipment, tripled our work force, established a new manufacturing subsidiary, and opened a West Coast marketing division.

We have also added a European sales representative that has already brought us profitable business."

He said that Scan-Data's orders backlog is now in excess of \$3 million.

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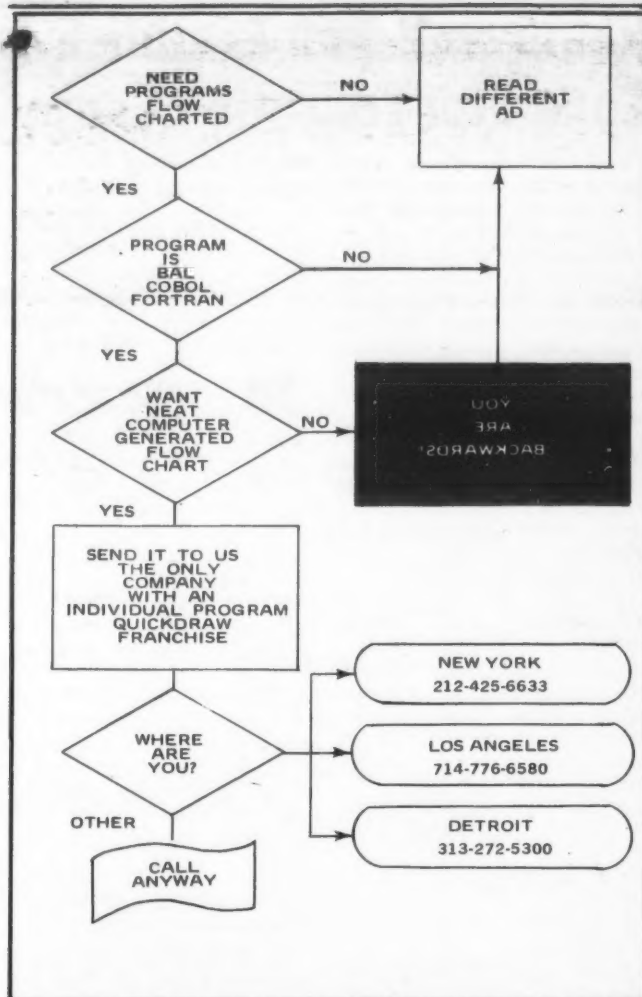
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## Optical Scanning Confirms Losses In Third Quarter

NEWTOWN, Pa. — Optical Scanning Corp. has confirmed an earlier report of a third-quarter loss. Revenues for the third quarter ended March 31, 1969, dipped to \$1,036,990 from the previous year's third-quarter revenues of \$1,646,712.

Losses for the quarter were \$299,971, or 57 cents per share, compared to earnings of \$179,348, or 34 cents per share including tax benefits of 17 cents per share, for the like period a year earlier.

Despite the third quarter loss, the company reported an increase in gross revenues for the nine months ended March 31, 1969, over the like period last year to \$5,533,865 from \$3,672,933.

Earnings were \$66,329, or 13 cents per share, compared to \$387,080, or 74 cents per share.

Earnings per share include tax benefits of 3 cents in the first three quarters of fiscal 1969 compared to 28 cents for the same period in fiscal 1968, arising primarily from operating loss carryforward.

Earnings per share are based on 524,000 shares outstanding in 1969, as opposed to 522,000 shares outstanding in 1968.

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## ACQUISITIONS

Computing and Software, Inc., Los Angeles, has announced a proposed expansion of its information and financial service activities with the signing of an agreement in principle to acquire Heitman Mortgage Co. of Chicago. The proposed agreement calls for an exchange of Computing and Software, Inc. voting securities for Heitman and its affiliates. The transaction is subject to negotiation and execution of a definitive agreement, and approval by the board of directors of both companies and appropriate regulatory agencies.

Informatics, Inc., Sherman Oaks, Calif., has acquired Computing Technology Inc., Paramus, N.J., and Washington, D.C., and the minority interest previously held by Information Dynamics Corp. in Technical

Information Services Co., Informatics' subsidiary in College Park, Md. Computing Technology Inc., a computer software company, was purchased for an undisclosed number of shares of Informatics stock.

Ad/Mar Research Co., Inc., New York, has acquired three companies included in the education and career training fields. They are Self-Instructional Development Corp., American Computer Institute, and The Second Career Schools.

A preliminary agreement has been reached in principle for the planned acquisition of Empire Synthetics Corp., Mount Vernon, N.Y., by Chronetics, Inc., which designs, manufactures, and sells electronic instrumentation used in the field of high-speed computer testing,

pulse-generator instrumentation, and high-energy physics. It is subject to the approval of Chronetics' board of directors and stockholders.

Management Data Corp., Philadelphia, has announced the termination of its previously reported discussions for the acquisition of Systems Associates, Inc. of Reading, Pa.

Ohio Valley Data Control, Inc., Belpre, Ohio, which processes work for commercial and banking institutions throughout West Virginia and eastern Ohio, has announced the purchase of Center Data Processing, Inc. of Charleston, a company which specializes in commercial data processing applications and special data processing applications for accountants and accounting firms.

# Beyond Operating Systems...

*Mellonics staff members are defining the next generation of large-scale information handling systems. Our present major activity is the design and development of advanced data system software for the Air Force. Current openings are for analysts and programmers with two or more years' experience in OS/360. Emphasis is on:*

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- OS externals, such as PL/I applications programming, application of system utilities, system maintenance, and familiarity with system generation tasks.

*These openings are for specialists in these areas, but we would also like to talk with those who have senior, across-the-board expertise.*

*Mellonics, the computer software arm of Litton Industries, has an enviable record of past achievements in large-scale, real time systems design. Current projects cover the spectrum of systems and applications from advanced space programs to man/machine communications.*

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## Honeywell EDP Establishes Computer Education Center

DALLAS — Honeywell's EDP Division has opened a half-million-dollar educational and computer center here.

The center is at the Expressway Towers "Cowboy" Bldg. (6116 N. Central Expressway) and will be used to meet customer data processing service requirements, demonstrations, and education, according to the company.

About 3,000 customers and employees in the Southwest region will be taught subjects relating to electronic data processing during 1969. Nearly half that number will be customers from the Dallas area.

Among the courses offered will be computer operator training; software and language development, including Cobol and Fortran; and other technical subjects enabling users to communicate with the computer.

The medium-scale computer system with high-speed card-reading, punching, and printing equipment, was installed, tested, and is being "debugged" at this time with customer services scheduled to begin soon, a company spokesman indicated.

Honeywell also plans to open another center in Houston later this year to handle similar data processing services.

### Computer Applications Opens Southeast Office

ATLANTA — Computer Applications Inc., an independent computer software company, has announced the opening of its Southeastern regional headquarters at 235 Peachtree St. N.E. The new office has been established primarily to market the services of the company's information sciences division, which serves a wide range of clients in industry and government.

### Computer Services Moves Headquarters

GROSSE POINTE, Mich. — Computer Services, which provides design and programming support to computer users, continuing data processing services, and supplemental keypunch services, has moved its headquarters to a new 17,000-sq-ft building at 23225 Northwestern Highway. The company has a staff of 195 data-processing employees and utilizes IBM and Honeywell computers.

### Com-Share Opens New Sales Office

NEW YORK — Com-Share has announced the opening of a new sales office at 3 E. 48th St. It will enable Com-Share to provide more responsive service to its Manhattan-based time-sharing customers, according to the company.

### E.P.G. Computer Signs Lease

NEW YORK — E.P.G. Computer Services, a computer software consulting firm, has signed a lease for 21,000 sq ft of space and is negotiating for an additional 9,000 sq ft in the new office building at 345 Park Ave., which they expect to occupy by July 1.

### MSA Computing Starts Atlanta Branch

ATLANTA — MSA Computing Co., a division of Management Science America, Inc., has opened its Atlanta Branch Computer Center at 1447 Peachtree St. N.E. MSA Computing Co. offers third-generation computing equipment as well as data recording, data conversion, and peripheral processing capabilities to firms throughout the United States.



### BCD Computing Moves to New Quarters

DEER PARK, N.Y. — BCD Computing Corp., a new data processing hardware company, has moved into larger facilities at 100 E. Industry Court, near Deer Park Airport on Long Island.

### Data Products Systems Opens Philadelphia Office

JENKINTOWN, Pa. — The systems division of Data Products Corp. has established a new sales and service office for the Philadelphia area. The new branch is located in The Pavilion.

### General Automation Opens TAC and Sales Office

CLEVELAND — General Automation, Inc. has opened a Technical Application Center (TAC) and regional sales office in the River City Bldg., Suite 403, at 2136 Center Ridge Road.

### ICC Relocates School

NEW YORK — International Computer Corp. has relocated its White Plains, N.Y. school and office to larger premises at 1 N. Broadway, White Plains. The new premises, designed and built for the company, occupy about 7,000 sq ft in the South Tower Bldg. of the White Plains Plaza.

### MSA Starts Houston Office

ATLANTA — Management Science America, Inc., a management consulting and computer software firm, has opened a regional office to serve Southwestern cities. Its location is Suite 450 of the Houston Natural Gas Bldg.

### Technitrend Moves Production Department

PENNSAUKEN, N.J. — Technitrend, Inc., manufacturer of data communications systems, has moved its production department into a 12,000-sq-ft building across from its present one in Pennsauken's Industrial Park.

### Safeguard Industries Forms New Group

STOKE-ON-TRENT, England — Safeguard Industries, a Philadelphia-based data processing systems company, has formed Safeguard Systems GB Limited for the manufacture and distribution of Safeguard business systems in Great Britain.



## Potter Instrument Reports 51% Increase in Revenue

PLAINVIEW, N.Y. — Potter Instrument Co., Inc., has reported record nine-month sales and earnings.

Sales for nine months ended March 31, 1969, increased 51% to \$21,118,200 from \$14,013,400 in the same period a year ago.

Net earnings for the three quarters amounted to \$1,933,300, or 79 cents per share, including a previously reported, non-recurring, after-tax gain of \$750,600, equal to 31 cents per share.

Net operating earnings advanced 25% to \$1,182,700 or 48 cents per share, from \$945,200, or 40 cents per share, for the first three quarters of fiscal 1968.

Sales for the third fiscal quarter were \$8,273,500, or 55% higher than the \$5,311,600 in the March 1968 quarter. Net income for the period increased 15% to \$406,800, or 17 cents per share, from \$352,600, or 15 cents for the same period a year earlier when a smaller number of shares was outstanding.

John T. Potter, president, reported the company's backlog at an all-time high. Orders scheduled for shipment were

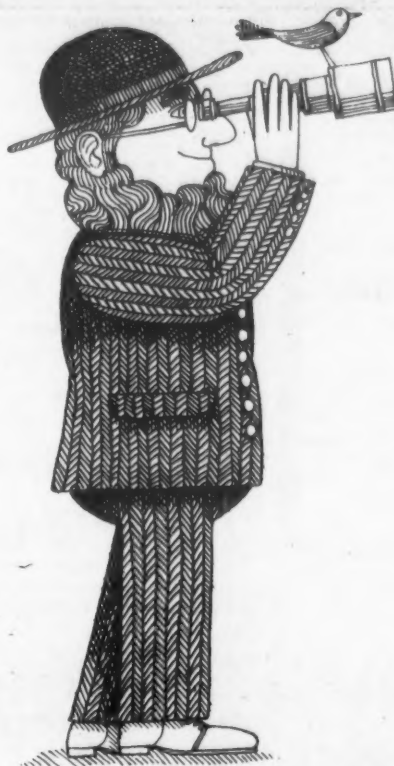
\$34,550,000 on March 31, more than double the \$16,990,000 a year ago.

He said a new agreement for the purchase of \$16,000,000 of tape transports over the next three years had been signed with a major computer manufacturer. He added that just under \$5,000,000 of the \$16,000,000 total was included in the current backlog of orders scheduled for shipment.

### SYSTEMS ANALYSTS

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Our programmer managers will be at the SJCC in Boston—if you are going to be there call S. D. Davis, Jr. at the Statler-Hilton, 426-2000, for an interview appointment or leave your resume at the Software Age Resume Center in the Statler-Hilton Hotel and he will contact you at your Hotel. If you do not attend the SJCC then send him your resume c/o Leeds & Northrup Company, Dept. P-11, Sumneytown Pike, North Wales, Pennsylvania 19454.

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Our programmers are people working with people — and they represent the fastest growing group (doubling in size each year for the past three years) in a dynamic, fast growing company deeply involved in the application of large computer systems to the automation of industrial processes. Their work is seldom routine, never dull, always challenging — and as diverse as the problems we are called upon to solve.

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## New Registrations

COMPUTER-OPTICS, INC., 124 S. Main St., Newtown, Conn. 06470, a company engaged in research and development of a product line of CRT visual telecommunication terminals and related devices for the purpose of data composition and communication, filed to register 250,000 shares of common stock. Proceeds, at \$8 per share, intended to purchase equipment and improvements in its offices, to establish a marketing program, to complete the design of a CRT computer terminal, and to develop new products. The underwriter is Louis B. Meadows & Co., Inc., 1694 Main St., Springfield, Mass.

ADVANCED MEMORY SYSTEMS, INC., 1276 Hammerwood, Sunnyvale, Calif. 94086, a company engaged in the development, manufacture, and marketing of memory

systems for computers, filed to register 210,000 shares of common stock. Proceeds, at \$10 per share, intended for use in sustaining the company's operations for 24 months if it derives no income from its activities. The underwriter is Phillips, Appel & Walden, Inc., 111 Broadway, New York, N.Y. 10006.

CONTROL INDUSTRIES, INC., 2800 McGee Trafficway, Kansas City, Mo. 64108, a company engaged in providing technical, educational, advisory, and data processing services to businesses and other institutions, filed to register 135,000 shares of common stock. Proceeds, at \$2.20 per share, intended for addition to the company's working capital and general corporate purposes. The underwriter is B.C. Christopher & Co., 4800 Main St., Kansas City, Mo. 64112.

AGRICULTURAL COMPUTING CO., 408 Vaughn Bldg., Amarillo, Texas, a company engaged in providing management information and data processing services to the agricultural industry, filed to register 250,000 shares of common stock. Proceeds, at \$4 per share maximum, intended for remodeling its computer center building and for development and implementation of its real-time computing system for cattle feed yards. The underwriter is Dallas Rupe & Son, Inc., 1400 Republic Bank Tower, Dallas, Texas 75201.

EDP ASSOCIATES, INC., 554 Fifth Ave., New York, N.Y. 10036, a company engaged in providing computer consulting, systems analysis, and programming development services to users of EDP equipment, filed to register 110,000 shares of common stock. Of these, 100,000 are to be offered for public sale by the company and 10,000 (being outstanding shares) by the present holders thereof. Proceeds, at \$5 per share maximum, intended for addition to the company's working capital and for general corporate purposes. The underwriter is Mulholland, Kaufman & Brady, Inc., 40 Exchange Place, New York, N.Y.

COMPUTER MANAGEMENT CORP., 135 S. Main St., Salt Lake City, Utah, a company engaged in offering and providing services to the users of EDP equipment, including evaluation of computers and related equipment, systems design and analysis, and programming, filed to register 150,000 shares of common stock. Proceeds, at \$6.50 per share, intended for purchase and installation of EDP equipment for its proposed computer time-sharing operations, for expansion of professional and administrative staff, for investigation and development of proprietary computer programs and computer-related systems. The underwriter is Kluger, Ellis & Mann, 26 Broadway, New York, N.Y.

(Continued on Page 58)

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## Earnings Report

### LOCKHEED AIRCRAFT CORP.

3 Months Ended March 31	
1969	1968
Revenue \$435,000,000	\$596,000,000
Earnings 9,300,000	12,200,000
Shr Ernd .83	1.09

### ADAMS-MILLIS CORP.

3 Months Ended March 31	
1969	1968
Revenue \$9,140,019	\$7,224,625
Earnings 412,057	349,141
Shr Ernd .23	a.19

a—Reflects a 2-for-1 stock split in May 1968. Results in both of the above include Texelastec Corp. acquired on a pooling-of-interests basis.

### LEVIN-TOWNSEND COMPUTER

Year Ended March 31	
a1969	b1968
Revenue \$66,172,000	\$16,873,000
Earnings 13,184,000	c6,048,000
dShr Ernd 3.71	1.53

a—Includes the operations of National Equities, Inc. from the date of the acquisition Aug. 1, 1968. b—Restated to include operations of Russell M. Tolley & Associates, Inc., a subsidiary acquired in Oct. 1968 on a pooling-of-interests basis. c—Equal to \$2.24 a share. d—Based on income before special credits and on a fully diluted basis.

### CLEVITE CORP.

3 Months Ended March 31	
1969	a1968
Revenue \$48,955,000	\$46,193,000
Earnings 2,629,000	2,705,000
Shr Ernd 1.27	1.32

a—Restated for surtax.

### STANDARD REGISTER CO.

3 Months Ended March 31	
1969	1968
Revenue \$25,470,611	\$23,695,732
Earnings 1,174,534	1,133,411
Shr Ernd .55	.53

### PHOTO MAGNETIC SYSTEMS, INC.

Year Ended Oct. 31	
1968	1967
Revenue \$198,473	\$12,838
Earnings (65,242)	(42,678)
(Loss)	
Shr Ernd (.21)	(.17)
(Loss)	

### RANDOLPH COMPUTER CORP.

3 Months Ended March 31	
1969	a1968
Revenue \$10,269,000	\$6,048,000
Earnings 1,092,000	702,000
Shr Ernd .45	.36

a—Restated by company.

### SCIENTIFIC DATA SYSTEMS

3 Months Ended March 31	
1969	a1968
Revenue \$26,366,000	\$21,081,000
Earnings 2,528,000	1,676,000
Shr Ernd .40	b.28

a—Restated to reflect federal surtax. b—Adjusted for a 3-for-2 stock split in June 1968.

### COMPUTER INSTRUMENTS CORP.

Year Ended Dec. 31	
1968	1967
Revenue \$7,538,795	\$8,464,939
Earnings 203,773	794,444
aShr Ernd .13	.49

a—Before special credit.

### NATIONAL EQUIPMENT RENTAL, LTD.

Year Ended Dec. 31	
1968	1967
Revenue \$20,802,000	\$12,169,000
Earnings 4,326,000	a4,226,000
Shr Ernd 1.40	a1.63

a—Includes extraordinary income.

### INDUSTRIAL NUCLEONICS CORP.

9 Months Ended Jan. 31	
1969	1968
Revenue \$11,627,000	\$10,113,000
Earnings 740,000	541,000
Shr Ernd .25	.19

### SSI COMPUTER CORP.

3 Months Ending March 31	
1969	a1968
Revenue \$6,680,771	\$21,000
Earnings 605,772	(212,000)
(loss)	
Shr Ernd .21	

a—Company was formed in Dec. 1967.

### MITE CORP.

Year Ended Feb. 28	
1969	1968
Revenue \$12,634,342	\$11,381,685
Earnings 601,096	547,710
Shr Ernd .28	.26

### TRW, INC.

3 Months Ended March 31	
1969	b1968
Rev. \$374,911,646	\$369,534,363
Earnings 18,544,884	17,026,204
aShr Ernd .55	c.50

a—Assumes conversion of residual securities. b—Adjusted to reflect surtax and operations of companies acquired on a pooling-of-interest basis. c—Adjusted to reflect 2-for-1 stock split in May 1968.

### DATA DOCUMENTS, INC.

6 Months Ended March 31	
1969	1968
Revenue \$10,252,936	\$7,769,967
Earnings 425,851	334,894
Shr Ernd .92	.72

### CONTROL DATA CORP.

3 Months Ended March 31	
1969	a1968
Revenue \$120,619,000	\$103,312,000
Earnings b17,432,000	10,671,000
Shr Ernd c.98	.75

a—Adjusted to include acquisitions on a pooling-of-interests basis. b—Equal to \$1.23 a share. c—Based on income before special credit.

### MINNESOTA MINING & MFG.

3 Months Ended March 31	
1969	a1968
Revenue \$367,872,000	\$328,682,000
Earnings 39,194,000	35,337,000
Shr Ernd .72	.65

a—Reflects pooling-of-interests in 1968 with Burgess Cellulose Co. and Allied Colour Film Services, Ltd.; also adjusted for the federal surtax.

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## New Registrations

(Continued from Page 56)

**DATA INDUSTRIES CORP. OF TEXAS**, Houston Natural Gas Bldg., Houston, Texas 77002, a company which intends to engage in the business of developing, installing, and manufacturing automated control systems as well as distributing and selling certain types of electronic equipment, filed to register 200,000 shares of common stock. Proceeds, at \$10 per share, intended for use in the purchase of equipment and training of four crews, for purchase of inventories and test equipment for setting up a national sales distribution organization, and for design and development expenses. The underwriter is Amos Treat Associates, Inc., 79 Wall St., New York, N.Y.

**ATLANTIC TECHNOLOGY CORP.**, 7th St. and New Hampshire Ave., Somers Point, N.J. 08244, a company engaged in the design, development, and manufacture of electronic devices and peripheral equipment involving CRT displays and the systems relating to the use of such displays, filed to register 250,000 shares of common stock. Proceeds, at \$15 per share, intended to construct additional facilities, to repay short-term indebtedness, and the balance to provide working capital. The underwriters are headed by F.S. Smithers & Co., 45 Wall St., New York, N.Y.

**COMPUTER SERVICES CORP.**, 23225 Northwestern Highway,

Southfield, Mich. 48075, a company engaged in the computer service business, filed to register 100,000 shares of common stock. Proceeds, at \$6 per share, intended to discharge certain indebtedness and to reduce accounts payable; the balance for other corporate purposes, including the development of proprietary computer programs. The underwriter is First of Michigan Corp., 1200 Buhl Bldg., Detroit, Mich. 48226.

**STANDARD COMPUTER CORP.**, 633 E. Young St., Santa Ana, Calif. 92705, a company engaged in the manufacture of computer systems and associated electronic systems and computer programs, filed to register 240,000 shares of common stock and \$3,000,000 of subordinated debentures due in 1984 (with attached warrant). Proceeds, at \$15 per share, intended to retire outstanding debentures (when due in 1970), and to retire existing indebtedness of a company to be merged with a wholly owned subsidiary of Standard. The underwriter is L.M. Rosenthal & Co., Inc.

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### Graham Elected President of Diebold Leasing

NEW YORK — John J. Graham, a group vice-president of General Dynamics Corp. and a former director and vice-president of International Telephone and Telegraph Corp. has been named president of Diebold Computer Leasing, Inc.

At General Dynamics, the heads of three corporate subsidiaries — the Military Electronics Div., Stromberg-Carlson Corp., and Stromberg Datagraphics, Inc. — reported to him.

Graham joined IT&T in 1961 as a vice-president, established and operated an acquisition group, and was a member of the company's board of directors. He was in charge of IT&T's North American operations. In 1964, he joined the Curtiss-Wright Corp. as a vice-president.

Prior to his assignment with IT&T, Graham was a vice-president and general manager of RCA's Communications and Controls Division in Camden, N.J. At RCA, he also served as vice-president-operations of the computer division.

### Joseph McNay Elected Cullinane Director

BOSTON — Joseph C. McNay, vice-president and director of Endowment Management and Research Corp., Boston, has been elected to the board of directors of Cullinane Corp., a new computer service firm in Boston.

McNay is also vice-president, Omega Fund, Inc.; trustee of Boston Hospital for Women and Children's Hospital Medical Center; and incorporator of Boston University Medical Center and Brookline Savings Bank.

He was previously vice-president of the Massachusetts Company, Inc., Massachusetts Fund, Independence Corp., Independence Fund and Freedom Fund, as well as fund manager for Massachusetts Fund and Freedom Fund and director of Independence Corp.

He is a graduate of Yale University and the Wharton School of Finance of the University of Pennsylvania.



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(Continued on Page 61)



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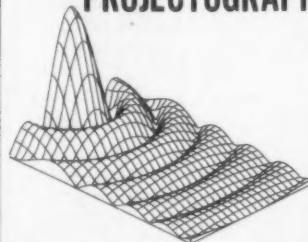
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